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ADDRESSES AND ORIGINAL ARTICLES

p-AMINOBENZENESULPHONAMIDE IN TREATMENT OF BACTERIUM COLI INFECTIONS OF THE URINARY TRACT*

BY MEAVE KENNY, M.R.C.S. Eng., M.C.O.G.
FIRST ASSISTANT, DEPARTMENT OF OBSTETRICS AND GYNÆCOLOGY, BRITISH POSTGRADUATE MEDICAL SCHOOL, HAMMERSMITH HOSPITAL, L.C.C.

F. D. JOHNSTON, M.D. Alberta
ASSISTANT IN BACTERIOLOGY AT THE SCHOOL; AND

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With a note on

THE TWO-PLATE BACTERIAL COUNT

BY A. A. MILES, F.R.C.P. Lond.
READER IN BACTERIOLOGY, UNIVERSITY OF LONDON

IN December, 1936, Huber described the striking results he had obtained with *p*-aminobenzenesulphonamide in the treatment of *Bacterium coli* pyelitis of children.

This paper deals with the clinical and bacteriological results of treatment with this drug (sulphanilamide) of 46 cases of *Bact. coli* urinary tract infections causing symptoms in pregnancy, the puerperium, before and after gynæcological operations. By the courtesy of our colleagues of the medical department of this hospital we have been able also to include a description of a few cases of pyelitis and cystitis treated in their wards by the same method.

Routine of Treatment and Investigation

When clinical diagnosis has been made, a catheter specimen of urine is sent to the bacteriologist for direct examination and culture. The administration of sulphanilamide is begun as soon as this first specimen has been withdrawn. Catheter specimens are subsequently sent for culture, estimation of bactericidal power, and concentration of sulphanilamide, on two fixed days of each following week, or as often as required by those of us (F. D. J. and T. von H.) who carried out the bacteriological and chemical examinations. In the first twenty or so cases we considered a bacterial count to be necessary on each specimen, for we had anticipated only a gradual decline of the infection. When we found that the urine almost invariably had become sterile at the second examination, even when, as sometimes happened, treatment had been carried out for only two days, we spared ourselves the trouble. The original infection was thereafter recorded as *very heavy* (10–150 millions per c.cm.), *heavy* (5–10 millions), or *moderately heavy* (750,000–5 millions). We did not treat patients in whose urine only a scanty growth of organisms was found.

The preparation of *p*-aminobenzenesulphonamide we have used is the Bayer product marketed as Prontosil Album, issued until recently in 0·3 gramme tablets, and now in 0·5 gramme tablets. We give our patients 0·5 or 0·6 gramme three times a day by mouth for five to seven days. No other treatment is employed, nor is there any restriction of diet or fluids. There appears to be no need to administer accessory acid or alkali, as the treatment is clinically effective over a fairly wide range of *p*H values, 5·2 to 6·8, of the urine.

Results

PYELITIS OF PREGNANCY

Of the 16 patients with pyelitis of pregnancy, 12 were treated with sulphanilamide in the acute stage of a first attack, as soon as admitted to the antenatal wards, with symptoms of renal pain and tenderness, pyrexia, and malaise, in addition to pyuria and bacilluria. We recount this familiar syndrome to show that we have been careful to treat *Bact. coli* infection of the urinary tract both in pregnancy and the puerperium only when, in our opinion, the morbid symptoms have been excited by the presence of the organisms. We have not treated accidentally discovered bacilluria but bacilluria causing symptoms. We stress this point because Dodds (1927, 1932) has shown that 7·5 per cent. of all pregnant women harbour *Bact. coli* in the urinary tract, but that only 1 per cent. or less develop pyelitis. Another 4 subacute cases had low or no pyrexia, but had renal pain and tenderness, and bacilluria. Two of these were treated for the first two days on massive doses of alkalis, and given sulphanilamide later, to sterilise the urine, in one case after mandelic acid had failed to effect this.

Summary of Clinical Results

Clinical diagnosis.	Cases.	Urine sterile in (aver.).	Dosage.	Duration of treatment.
Pyelitis of pregnancy ..	16	4 days.	0·5–0·6 g. (7½–9 gr.) t.i.d.	5–7 days.
Urinary tract infection in the puerperium ..	17	4 „	„	5–7 „
Pre- and post-operative urinary tract infection	9	3 „	„	4–5 „
Pyelitis	2	3 „	„	7 „
Cystitis	2	2 „ 7 „	„	7 „
Total	46			

In every case of a typical *Bact. coli* infection the drug appeared to bring about a rapid remission of symptoms and sterilisation of urine. Temperature and pulse-rate fell to normal in an average of forty-eight hours after treatment had begun. The urine, however heavily loaded with pus and bacteria at the first examination, became free of both in 2–5 days. Five of the patients had albuminuria or other signs of pre-eclamptic toxæmia before treatment was instituted for pyelitis, but in none was the condition aggravated in any way. Spontaneous premature termination of pregnancy occurred in 2 cases during the administration of sulphanilamide, and after acute symptoms of pyelitis had subsided. One patient had had intermittent uterine bleeding since early pregnancy and was receiving treatment with endocrine preparations. She miscarried at the twenty-sixth week. The other was delivered of a thirty-seven weeks old fœtus three days after ceasing treatment with sulphanilamide. The baby was perfectly healthy, although the mother's blood showed traces of met- and sulph-hæmoglobin.

This seems to be the appropriate place to describe our one failure, the only case from our wards not included in this series.

The patient, a woman of thirty, was admitted to hospital in the twentieth week of her first pregnancy,

* This paper was communicated to the Medical Research Society on May 7th, 1937.

with slight albuminuria, pyuria, and bacilluria. A heavy growth of an atypical *Bact. coli* was isolated from the urine. Intermittently, during the remainder of the pregnancy, she developed subacute attacks of pyelitis, and the albuminuria persisted at a fairly constant low level. Treatment with large doses of alkalis always abated the clinical symptoms, but our repeated efforts to sterilise the urine with hexamine or sulphanilamide failed completely, and mandelic acid nauseated the patient and could not be given a fair trial. In the puerperium, pyuria and bacteriuria (still of the atypical variety of *Bact. coli*) persisted, although without other clinical symptoms than lassitude and a general lack of well-being, unaffected by renewed treatment with sulphanilamide. Intravenous urography during pregnancy showed nothing beyond marked dilatation of the kidney pelvis and ureters; and now, nearly two months after delivery, the patient still has an infection of the urinary tract with an organism that seems highly resistant to bactericides.

The *immediate prognosis* of pyelitis of pregnancy treated with sulphanilamide is therefore very good. "A complete cure of the pyelitis during the pregnancy in the sense that the urine becomes sterile," to quote Browne (1935), was obtained in every case of a typical *Bact. coli* infection. None has developed a chronic pyelitis. Pyrexia is limited to 2–3 days only, and there seems to be no reason to anticipate the return of an acute attack later in pregnancy or in the puerperium. One patient in the series was treated early in pregnancy, during a severe attack, with complete success. This was the more notable, as the same woman had had to have her first pregnancy terminated twenty-eight months before for recurrent severe pyelitis: she is now eight weeks from term, and has had neither clinical nor bacteriological relapse.

Recurrences.—Six patients to our knowledge have had during pregnancy, at varying intervals after treatment, a recurrence of bacteriuria. It is possible that this figure is even higher, but, as we deprecate the frequent catheterisation of pregnant women, we have not attempted to assess the relapse rate more accurately. Relapse with clinical symptoms, however, has not occurred in the series, and there are now only 2 women undelivered, and in the last few weeks of a since uneventful pregnancy.

Sulphanilamide (approximately 0·5 mg. per 100 c.cm.) was recovered from the amniotic fluid of one patient under treatment for pyelitis complicating an acute hydramnios, which necessitated frequent tapping of the uterus through the abdominal wall.

PROPHYLAXIS AGAINST STREPTOCOCCAL INFECTIONS

With Colebrook and others (1936) one of us (M. K.) held the hope that sulphanilamide might prove effective in temporarily immunising women exposed to the risk of streptococcal infections. However, in the fact that two of our patients developed acute tonsillitis due to the *Str. hæmolyticus*, Group A during treatment, we find evidence that, at least with the small dosage that we employ, this hope is not to be realised.

URINARY TRACT IN INFECTION OF THE PUERPERIUM

Seventeen patients with *Bact. coli*† infections of the urinary tract and pyrexia (with or without pathogenic organisms in the genital tract) have been treated with sulphanilamide, and have responded as rapidly and completely as in pregnancy. In every case the symptoms abated in two to three days, and the urine became sterile and free from pus in an average of three days. So far, three months later, there has been only one case with clinical and bacteriological relapse, and she was rapidly relieved by the same means.

PRE- AND POST-OPERATIVE URINARY INFECTIONS

These were mainly cases of chronic cystitis, occasionally of several months' or years' duration. Of the 9 treated in the gynæcological wards 7 had plastic operations performed for the relief of genital prolapse. In 4 of these a gross infection causing symptoms was relieved before operation; 3 patients were treated after operation for dysuria, frequency, and pyrexia due to the presence of large quantities of pus and bacteria in the urine. The eighth case developed pyrexia and dysuria after vaginal hysterectomy, and her symptoms subsided very quickly (2 days) after treatment had been begun. The ninth patient was found to have bacilluria and pyuria on admission for laparotomy, and was rendered rapidly free from infection and dysuria before operation.

CASES TREATED OUTSIDE THE OBSTETRICAL WARDS

In the medical department 4 patients with urinary infections have been treated. One was a patient with disseminated sclerosis and defective bladder control. Although we had not hoped to do more than temporarily to relieve the infection, we are told that dysuria and incontinence were greatly improved as the numbers of pus cells and bacteria lessened. It is interesting to note that in this case the infection was a mixed one, *Proteus vulgaris* and *Bact. coli*, and that, whereas the *Bact. coli* disappeared after three days of treatment, the proteus was more resistant, and it took seven days to clear the urine completely. Partial relapse has been inevitable in this case, but the original type of infecting organism has not reappeared, and it is hoped that small daily doses of sulphanilamide now being given will diminish the infection and relieve symptoms. Two other patients had chronic pyelitis of some months' duration, which had resisted other methods of treatment, including mandelic acid, but yielded rapidly and permanently to sulphanilamide. The fourth was a case of acute cystitis of ten days' duration, unrelieved by large doses of alkalis and sedatives. Twelve hours after starting treatment with sulphanilamide frequency and dysuria ceased; forty-eight hours later the urine was free from the pus cells and *Bact. coli* with which it had been heavily loaded. Relapse has not been reported in any of these last cases.

Toxic Effects

The incidence of sulphæmoglobinæmia and methæmoglobinæmia has been low; 7 cases only developed the characteristic livid tinge of lips and skin, and showed in their blood the typical absorption bands. Two others appeared temporarily cyanosed, but examination of the blood failed to confirm the diagnosis. None of the patients were aware of or complained of any symptoms attributable to the blood changes, and the discolouration, except in one case where it persisted for two weeks, faded in less than a week. The development of this discolouration, if for cosmetic reasons alone, remains the only serious drawback to this method of treatment that we have encountered. The administration of sulphates and saline purgatives was forbidden during treatment with sulphanilamide.

No other toxic manifestations were apparent in the acute pyelitis of pregnancy cases; "stuffiness" and slight headache were uncovered on questioning in about half the puerperal and gynæcological cases.

† One with a mixed infection, *Bact. coli* and *Bact. lactis aerogenes*.

In no instance were these symptoms severe or lasting. We were never forced to discontinue administration of the drug before cure was complete; although when sulphæmoglobinæmia or methæmoglobinæmia developed we stopped treatment as soon as the urine was reported clear and the clinical manifestations of infection had subsided.

As mentioned above 2 women had premature spontaneous termination of pregnancy during or shortly after treatment with sulphanilamide. In one, this catastrophe appeared inevitable; the second patient, despite the recent development of sulphæmoglobinæmia, was delivered of a healthy five-pound baby which throve.

Comparison with Other Urinary Disinfectants

It may be thought that with so efficient a remedy for urinary infections as mandelic acid already in our hands the introduction of sulphanilamide is unnecessary. In our experience, however, the administration of mandelic acid has some serious drawbacks in obstetrical practice. The ritual necessary to success is not well tolerated by the pregnant woman: the limitation of fluids and the occasional need for large auxiliary doses of ammonium chloride or sodium phosphate are trying to a nauseated and febrile patient; and, even when her coöperation has been assured, the mechanical factors underlying pyelitis of pregnancy cause the treatment very often to fail completely. In personal communications colleagues here and abroad confirm these observations. In the puerperium mandelic acid is generally more useful, but even then is more valuable and better tolerated when the acute stage of an infection has been abated with alkalis, and the acid is used later to sterilise the urine. In our experience treatment with mandelic acid or hexamine often fails when the urinary infection is complicated by the presence of an inflammatory mass in the pelvis; another drawback is the length of time necessary to effect complete sterilisation of the urine—ten to twenty-one days with mandelic acid (Rosenheim 1935) as against two to five with sulphanilamide.

The *comparative cheapness* of treatment with sulphanilamide is also worth consideration. The cost for an average case is between 3*s*.-4*s*., less than half that for even the shortest period of treatment with mandelic acid.

In-vitro Tests of Bactericidal Power of Urine

The administration of sulphanilamide to the first few patients of the above series resulted in apparent sterilisation, within an average time of four days, of urines which prior to treatment had contained between 25 to 125 million *Bact. coli* per c.cm. In-vitro tests were then undertaken in order to obtain additional evidence of the bactericidal power of the drug.

Freshly voided specimens of *urine* were collected from patients under sulphanilamide treatment. The reaction was adjusted to *p*H 6 by the addition of N/1 sodium hydroxide or 10 per cent. phosphoric acid as necessary (Garrod 1935). Brom-cresol purple was used as the indicator. The urine was then sterilised by passing it through a Seitz E.K. filter and distributed in exact 5 c.cm. amounts in sterile 5 in. by $\frac{5}{8}$ in. tubes. Tests made on a few specimens showed that filtration caused no change in the sulphanilamide content or *p*H of the urine. One tube from each specimen was incubated as an uninoculated control; in 40 specimens this was contaminated only once.

The test *organisms* were freshly isolated strains of *Bact. coli* obtained chiefly from patients in the above series. The test cultures were grown for four hours in heart broth a 37° C. Viable counts were made and at the same time four 5 c.cm. amounts of each urine were inoculated with 0·02 c.cm. of increasing tenfold dilutions of a culture so that they received respectively about 100,000, 10,000, 1000, and 100 organisms per c.cm. The number of organisms inoculated was determined more exactly by the result of the viable count, which was read the following day. The urine cultures were incubated at 37° C. for twenty-four hours and at the end of that time viable counts were made of each of the four urinary cultures.

VIABLE COUNTING METHOD

The laboratory methods of determining the number of living organisms in a culture yield approximate values only. In testing the bactericidal power of a solution, a relatively small inoculum of the bacterium is added to the solution and counts made to determine whether it is killed or multiplies freely. It is important, therefore, to know what reliance can be placed upon the viable count method, for it is possible to obtain results that apparently indicate either a growth or a death of the bacteria, which in reality can be attributed only to sampling errors and to errors in the technique of counting.

The method used in this investigation was a modification of one described by Miles (1936).

One-fiftieth of a c.cm. of each increasing tenfold dilution of the culture of urine is allowed to fall from standardised dropping-pipettes on to the surface of marked areas of over-dried McConkey agar plates. The fluid spreads over an area about 20 mm. in diameter and is rapidly absorbed. After incubation the drop areas yielding the largest number of discrete colonies are counted. With coliform organisms, on McConkey agar plates, the colony size is such that counts in the drop area of up to 25 may be made; larger numbers of colonies tend to be confluent. By this technique, "surface-viable" counts of a large number of specimens can be made rapidly.

The method, which has been used in this laboratory for two years, gives consistent results in the hands of experienced workers. The error attributable to technical variations is small, provided that the medium is suitable for the organism counted and is constant in growth-promoting properties. The number of colonies developing in countable drop areas from a given dilution of culture are in reasonable accordance with a Poisson distribution and have a variance approximating to the mean. Owing to the large number of tests made, two plates only were used for each estimation of the number of bacteria in each suspension. A note on the reliability of the two-plate surface-viable count by Dr. A. A. Miles is appended below.

It can be shown that, expressing the viable counts as logarithms, an increase or a decrease in the log. of the count of 1·7 or more is significant. The present series of experiments tests the bactericidal power of urine, so that a drop in the log. count of less than 1·7 indicates a bacteriostatic power only. But if the same criterion is applied to a rise in the log. count some urines which actually allow slight growth will fall into the bacteriostatic class, and since even bacteriostasis is a therapeutically desirable condition in a urine the value of the drug may consequently be over-estimated. To be on the safe side, therefore, a fivefold increase, corresponding to a rise of 0·7 only in the logarithm of the count, was considered as evidence of multiplication of the inoculum.

In Fig. 1, for example, the inoculum at O, of 10,000 organisms, is considered to have multiplied if the log. of the final count lies between B_1 and G. Between

B_1 and B_2 lies the range of bacteriostasis, and below B_2 the range of killing. The lines OG and OS, at the extremes, indicate free growth and "sterilisation" respectively.

BACTERICIDAL TESTS ON URINE

"Normal" urines.—Ninety-six tests were made on 7 specimens of urine from normal adults and on 10 specimens from patients in this series before receiving sulphanilamide. Each strain of *Bact. coli* used in the investigation was tested for growth at least once in a sulphanilamide-free urine. In each case an inoculum of about ten organisms per c.cm. had increased after twenty-four hours' incubation to approximately 100 million.

Urines of patients treated with sulphanilamide.—It has been shown by Fuller (1937) and Marshall, Emerson, and Cutting (1937) that sulphanilamide

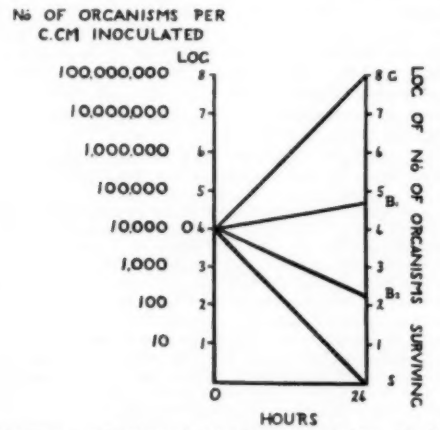

FIG. 1.—The hypothetical fate of an inoculum of 10,000 organisms of *Bact. coli* after 24 hours' incubation in a urine containing sulphanilamide.

is excreted in the urine in two forms, a combined and a free. Quantitative estimations of these were made on most of the specimens used for the bactericidal tests. When sulphanilamide content is mentioned it is the amount of the free drug that is referred to unless otherwise stated. There are two reasons for this: first, in the specimens tested the ratio of free sulphanilamide to total was nearly always the same, and second, because there is reason to believe that the method of estimating the free is more reliable than that used for estimating the total.

It is possible that the apparent bactericidal effect of sulphanilamide, described below, might be due merely to inhibition of growth exerted by the drug carried over from the urine cultures to the surface of the count-plates. To test this possible fallacy the following experiment was made. It was estimated that the surface of a whole plate was twenty-five times greater than the surface-spread of 0·02 c.cm. of inoculum. Six McConkey plates were each flooded with 0·5 c.cm. of a specimen of urine to which sulphanilamide had been added so that it contained 150 mg. per 100 c.cm., which was a higher content than was found in any of the urines used for bactericidal tests. When the fluid had been absorbed duplicate counts were made on these plates and on an equal number of untreated McConkey agar plates, of a culture of the strain (No. 17) which had shown the greatest susceptibility to sulphanilamide. The results of the two counts were identical, showing that the sulphanilamide was not present in sufficient concentration to influence growth on the plates.

The explanation of this fact seemed to be that the sulphanilamide solution diffused through the solid medium so that the concentration at the surface of the plate was low. Experiments testing the diffusibility in agar of a urinary solution of Prontosil "red" proved this to be a reasonable assumption. The diffusion was such that the concentration of the drug on the surface area covered by one drop (0·02 c.cm.) would at most be 1/50, and more likely 1/100 of that in the original solution.

Figs. 2, 3, and 4 show the results of culturing five strains of *Bact. coli* in three urines of different sulphanilamide content. They are representative of the findings in a number of tests and demonstrate (*a*) variations in susceptibility between the strains, and (*b*) that the bactericidal action is increased with a higher sulphanilamide concentration. The bactericidal tests performed are summarised in Tables I, II, and III.

In these tables GG indicates that the log. of the number of organisms per c.cm. after 24 hours' incubation was greater by 4 or more than the log. of the number of organisms inoculated. SS indicates a decrease of the same order. G, B, and S indicate growth, bacteriostasis, and "sterilisation" respectively, as already demonstrated in Fig. 1. It should be emphasised that "sterilisation" merely indicates that after 24 hours' incubation some of the inoculated organisms had been destroyed, and not that the cultures had necessarily been rendered sterile.

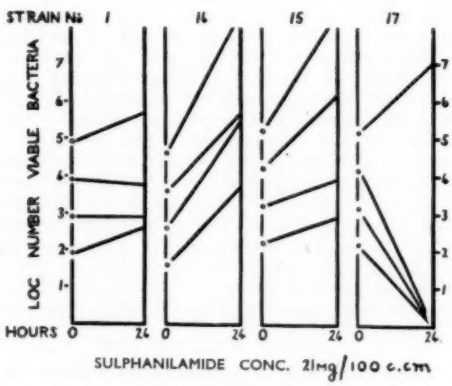

FIG. 2.—Results of culturing four strains of *Bact. coli* in a urine (P_2) of low sulphanilamide concentration.

Table IV is a summary of Tables I, II, and III, showing the percentage of tests in which growth (GG or G), bacteriostasis, and "sterilisation" (S or SS) were observed. The results of the tests on normal urines are included. The four tables demonstrate conclusively that the bactericidal action of the urine is dependent on the sulphanilamide content.

The early tests in this series were made on specimens of unknown sulphanilamide content, and these are included in Table V together with the results of a few tests made with one strain each of *Proteus vulgaris*, *Bact. aerogenes*, *Streptococcus fæcalis*, and *Staphylococcus aureus*. All strains except the last named were freshly isolated from urinary infections. The strain of staphylococcus was isolated from a case of puerperal mastitis.

Table V shows that the strains of *Bact. coli* tested can be divided into three groups according to their

susceptibility to the action of sulphanilamide. There is a resistant group, a non-resistant group, and an intermediate group of a few strains which could not be classified in either of the other two. The morphology, colonial, biochemical, and other characteristics of these strains were investigated. They all gave typical coliform colonies on solid media, failed to grow in Koser's citrate, fermented lactose, formed indol in peptone water, and were V.P. negative and M.R. positive. With regard to fermentation of sucrose and salicin, and motility, all but Nos. 2, 3, 7, 11, and 13 were of the *commune* type. Nos. 2 and 3 were of the *acidi lactici* and *neapolitanum* types respectively (Topley and Wilson 1936). No association between the type of organism and susceptibility to sulphanilamide was demonstrable.

In regard to the organisms other than *Bact. coli* no conclusions can be drawn from the small number of tests made. It is worth noting, however, that the

TABLE I

The fate of different strains of Bact. coli *cultured in urines having a sulphanilamide content of from* 3 *to* 24·5 *mg. per* 100 *c.cm.*

Strain.	Mean sulphanilamide content mg./100 c.cm.	No. of urines.	Result: 24 hours' incubation.				
			GG	G	B	S	SS
1	17·5	8	..	2	4	2	..
2	16·5	3	1	2	..	..	..
8	17·3	3	..	3	..	..	..
9	17·8	6	3	3	..	..	..
11	15·3	5	..	2	..	2	1
13	12·5	2	..	1	1	..	..
14	19·0	8	1	6	1	..	..
15	18·2	7	2	3	2	..	..
17	18·5	6	..	1	1	3	1
Total		48	7	23	9	7	2

TABLE II

The fate of different strains of Bact. coli *cultured in urines having a sulphanilamide content of from* 28·4 *to* 47 *mg. per* 100 *c.cm.*

1	41·4	2	..	..	1	1	..
8	40·0	1	..	1	..	..	..
9	39·0	4	..	3	..	1	..
11	43·5	2	..	..	..	1	1
13	47·0	1	..	1	..	..	..
14	43·3	3	..	3	..	..	..
15	40·1	3	1	1	1	..	..
16	28·5	1	..	1	..	..	..
17	37·1	3	..	..	1	2	..
Total		20	1	10	3	5	1

TABLE III

The fate of different strains of Bact. coli *cultured in urines having a sulphanilamide content of from* 51·7 *to* 100 *mg. per* 100 *c.cm.*

1	72·8	7	..	..	2	4	1
2	51·2	1	..	..	..	..	1
8	60·0	1	..	1	..	..	..
9	83·9	5	..	2	1	1	1
11	72·1	5	..	..	..	3	2
13	51·2	1	..	1	..	..	..
14	80·2	4	..	1	2	1	..
15	86·5	6	..	3	1	1	1
16	74·5	2	..	..	..	1	1
17	86·5	6	..	..	..	3	3
Total		38	..	8	6	14	10

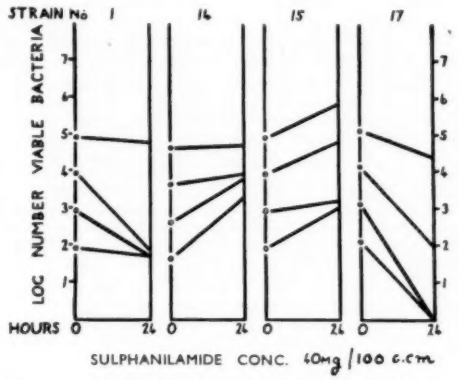

FIG. 3.—Results of culturing four strains of *Bact. coli* in a urine (U_2) of moderate sulphanilamide content.

TABLE IV

Summary of Tables I to III

Sulphanilamide content mg./100 c.cm.	No. of urines.	Results in percentages after 24 hours' incubation.		
		G	B	S
0 ..	96	100	0	0
3–24·9 ..	48	62·5	18·7	18·8
25–49·9 ..	20	55	15	30
50–100 ..	38	21·0	15·7	63·3

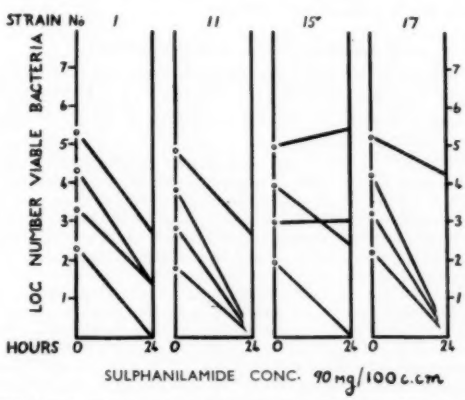

FIG. 4.—Results of culturing four strains of *Bact. coli* in a urine (P_1) of high sulphanilamide content.

Streptococcus fæcalis was the only completely resistant organism. This is borne out by the fact that in five of the cases under treatment with sulphanilamide this organism was found in the urine after the original infecting agent (*Bact. coli*) had disappeared.

TABLE V

Organism.		Sulphanilamide urines: Number tested.	Fate of each strain in sulphanilamide urine.		
			Free growth.	Bacteriostasis.	"Sterilisation."
Bact. coli	No. 1	26	2	9	15
	11	17	2	1	14
	17	16	1	2	13
	3	8	..	2	6
	4	8	..	..	8
	16	4	1	..	3
	6	7	1	1	5
	7	7	1	3	3
	2	12	4	3	5
	13	8	4	2	2
	9	22	14	4	4
	14	18	14	3	1
	15	17	10	5	2
	8	11	9	2	..
	10	3	3	..	..
Bact. aerogenes	12	2	1	1	..
Prot. vulgaris	19	2	..	2	..
Strep. fæcalis	18	3	3	..	..
Staph. aureus	20	2	..	2	..

The dependence of the bactericidal power of sulphanilamide upon the nature of the individual infecting strain was demonstrated in the treatment of mixed *Bact. coli* and *Bact. aerogenes* infections. In one male patient (not included in this series) the urine was rendered free of *Bact. coli* but remained heavily infected with *Bact. aerogenes*. In another case the two organisms disappeared from the urine at the same time. Both the aerogenes strains mentioned above were typical, forming mucoid colonies on agar; they produced acid and gas in lactose, sucrose, and salicin, grew in Koser's citrate, were V.P. positive and M.R. and indol negative.

Biochemical Examinations

Estimation of sulphanilamide in urine was carried out by the method of Marshall et al. (1937) in which the diazotised urine is coupled with dimethly α-naphthylamine.

The accuracy of the colorimetric readings was much enhanced by the use of a green light filter, and standard solutions could be eliminated by employing a neutral grey screen (King, Haslewood, and Delory 1937). Light absorption curves of the treated urine and of sulphanilamide were obtained against the neutral grey screen, and provided evidence for the assumption that most of the colour-producing substance in the urine is sulphanilamide.

It was found that the colour increased slightly up to 10 minutes after adding the α-naphthylamine, then remained constant up to 30 minutes, and after one hour had begun to fade appreciably. The test should therefore be read between 10 and 30 minutes after the addition of the naphthylamine. All the estimations were made under standard condition by one observer (T. von H.).

The values for free sulphanilamide in the 24 urines examined ranged from 0 mg./100 c.cm. to 100 mg./100 c.cm., those for the total sulphanilamide from 0 mg./100 c.cm. to 196 mg./100 c.cm.

The ratio of free to conjugated sulphanilamide varied from 1/0·56 to 1/1·69, with a mean of 1/0·98 and a standard deviation of ±0·27. In the majority of cases the total sulphanilamide was very nearly twice the amount of free sulphanilamide, regardless of the concentration of the substance present. A similar cluster of ratios round the 1/1 point was observed by Fuller and occurred in about 50 per cent. of the results of Marshall et al. No explanation for this observation can be offered. A study of the literature on the excretion of substances administered by mouth produced no strict analogies, although it was found that, in the case of some of the substances which are excreted unaltered in the urine, conjugation with various compounds took place in fairly constant ratios—e.g., phenylacetic acid after ingestion combines in man with glutamine and glucuronic acid in the proportion of about 18 to 1 (Ambrose, Power, and Sherwin 1933), and benzoic acid is conjugated in the dog with glucuronic acid and glycine in the ratio of roughly 3 to 1, while phenylacetic acid is combined with glucuronic acid and glycine in the ratio of approximately 1 to 2 (Quick 1928).

In three urines which were re-examined after having stood at room temperature for 3 weeks the ratio was found to be altered; the values for free sulphanilamide had remained constant, while the total estimation showed significantly higher results than in the fresh urines. The number of examinations is small and a possible source of error is the method of hydrolysis, which does not completely exclude small variations in the degree to which this reaction takes place.

Discussion of Bactericidal Tests

The method used in these experiments for counting the number of viable organisms is one which allows a large number of counts to be made in a comparatively short time. In an investigation of this kind a large number of independent tests is desirable not only because of the variation in susceptibility between different strains or organisms but because the different specimens of urine used as culture media are certain to show variations in their constituents which render them relatively favourable or unfavourable for bacterial growth, and the results of testing the bactericidal effect of a few specimens of urine against one strain of *Bact. coli* would very likely lead to fallacious conclusions.

The results of the in-vitro tests of the bactericidal action of sulphanilamide lead one to expect that clinical results from treatment would not be uniformly good. This has not, however, been our experience. For instance, strains No. 14 and 15 though resistant to the action of sulphanilamide in vitro were isolated from infections which rapidly cleared up under treatment. The patient infected with strain No. 14 had an acute attack of pyelitis in the 22nd week of her pregnancy. Before treatment a bacterial count made on the urine showed 75 million organisms per c.cm. Within five days' treatment the urine was sterile. Strain No. 15 was isolated from a case of puerperal urinary infection. The urine before commencing sulphanilamide contained 125 million organisms per c.cm. and was rendered sterile in three days by treatment.

It should be noted that the dosage of sulphanilamide used in treatment of our cases was relatively small, and it is quite possible that using large doses a concentration of the drug could be obtained in the urine which would in vitro exert a more consistent bactericidal effect.‡

‡ Since the completion of this investigation, a report has been noted in the *Proceedings* of the Staff Meeting of the Mayo Clinic, April 21st, 1937, which appears to support this contention.

Of the other urinary antiseptics commonly used Garrod in 1935 showed that only hexamine exerted any appreciable bactericidal action in vitro. Since then Rosenheim (1935) in this country and Helmholtz and Osterberg (1936) in America have demonstrated the effectiveness of mandelic acid. From Garrod's experiments, since he used only one strain of *Bact. coli*, no conclusions can be drawn as to whether or not different strains might show variations in susceptibility to hexamine. The bactericidal action of mandelic acid depends on two factors—a sufficiently high concentration of the drug and a low *p*H of the urine. These two drugs apparently act only by virtue of their presence in the urine. Sulphanilamide, which may be present up to a concentration of 20 mg. per 100 c.cm. in the blood (Marshall et al.), might be expected to exert a bactericidal, or at least a bacteriostatic, action in the tissues similar to its action in experimental infection with *Streptococcus hæmolyticus* (Colebrook, Buttle, and O'Meara 1936) which could account for a therapeutic efficacy beyond that indicated by the in-vitro tests.

Conclusions

1. Small oral doses of *p*-aminobenzenesulphonamide effected the rapid disappearance of *Bact. coli* and pus cells from the urine, and remission of symptoms, in 46 women with urinary tract infections.

2. Failure to relieve infection and symptoms was not encountered in typical *Bact. coli* infections. In a single case atypical coliform organisms were unaffected by the drug, but *Bact. aerogenes* and proteus infections yielded to treatment in two instances.

3. Return of bacteriuria was found to be fairly common in pregnant women, but relapse with clinical symptoms did not occur in a series of 16 cases of pyelitis of pregnancy.

4. The rapidity of action and simplicity of administration of sulphanilamide make it especially valuable in pyelitis of pregnancy, and in the pre-operative treatment of gynæcological patients. The cheapness of this drug, compared with other urinary disinfectants, is an additional reason for its employment.

5. Toxic manifestations of sulphanilamide administration, such as sulphæmoglobinæmia, methæmoglobinæmia, and headache, appeared in a few patients but were not taken as an indication to discontinue treatment.

6. Sulphanilamide administered by mouth renders the urine bactericidal to certain members of the *Bact. coli* group.

7. The bactericidal power of the urine is roughly proportional to the sulphanilamide content.

8. Strains of *Bact. coli* are not all equally susceptible to this bactericidal action, some being almost completely resistant.

9. Strains which are resistant to the bactericidal action of sulphanilamide in vitro are not necessarily so in vivo.

We would like to record our gratitude to Prof. James Young and Prof. F. R. Fraser for allowing us to publish accounts of cases treated in the obstetrical, gynæcological, and medical departments. We also wish to thank warmly Dr. Miles, Mr. E. J. King, Ph.D., and Mr. G. A. D. Haslewood, Ph.D., for their encouragement and assistance in laboratory investigation; and the resident staff of the obstetrical department for their coöperation.

A Note on the

RELIABILITY OF THE TWO-PLATE SURFACE-VIABLE BACTERIAL COUNT

BY A. A. MILES

Assuming that the distribution of the individual counts does approximate to a Poisson distribution, an estimate of the significance of the difference between any two such counts may be made. The mean of a two-plate count is m, the standard deviation $\sqrt{m}$, and the standard error of the mean $\sqrt{m/2}$. The standard error of the difference between two means, m_1 and m_2, will be $\sqrt{(m_1+m_2)/2}$. In Table VI there are four specimen counts, C1 to C4, for comparison. With 25 as the maximum, and 3 as the minimum, number countable in a drop area, the difference between C1 and C2, the largest possible by this method, is $25-3=22$, with a standard error of $\sqrt{(25+3)/2}=\pm 3{\cdot}74$; and the difference in terms of its standard error is 5·88. This last value is "Students" t, to the estimate of which each mean contributes one degree of freedom. In Fisher's (1930) table of t, N therefore is 2, and 5·88 corresponds to a probability of less than 1 in 30. Adopting as a criterion of significance a probability of 0·01, the difference between two means, to be significant, must be at least 9·925 times its own standard error. No difference, therefore, between any pair of two-plate counts made *in the same dilution* is statistically significant. Comparing counts C1 and C3, in dilutions differing tenfold, the mean m_1 in the 10^{-7} dilution, to be directly comparable with the mean m_2 in the 10^{-6} dilution, is multiplied by 10 and has a standard error of $\sqrt{(10\sqrt{m_1})^2/10n}=\sqrt{5m_1}$. It can be shown that the smallest significant difference for the most disadvantageous values of m_1 and m_2 is about 90, and that all differences greater than this yield t greater than 9·925. In dilutions differing by 100-fold—e.g., C2 and C4—the counts are always significantly different.

TABLE VI

Dilution.	Count.			
	C1	C2	C3	C4
10^{-5} ..	+++	+++	+++	13
10^{-6} ..	About 30	+++	5	1
10^{-7} ..	3	25	0	0

Specimens counts made by the "surface-viable" method. Colonies developing from 0·02 c.cm. of dilution. +++ indicates confluent growth in the drop area.

In each test four graded inocula of an organism were inoculated with 5 c.cm. samples of urine, and viable counts made before and after 24 hours' incubation. The results were recorded on a logarithmic scale, as in Fig. 1. Here unit changes in the scale indicate changes in the ratio of one count to another. Now the ratios of the theoretically possible, significantly different, count values in adjacent tenfold dilutions range from 20 downward, so that a ratio of 20 or more between the initial and final counts is significant of the multiplication or death of the inoculum. This corresponds to a rise or drop of 1·3 in the logarithm of the counts. To increase the stringency of the criterion, and allow for the errors of counting technique, the ratio 50, corresponding to a change in logarithm of 1·7, has been adopted as the lower limit of significant difference between the logarithm of two counts. This figure is applicable to inocula of any size, for the ratio of any two counts is independent of the multiplication of count values by dilution factors.

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INTRODUCTION OF THE SMITH-PETERSEN PIN IN TREATMENT OF INTRACAPSULAR FRACTURES OF THE NECK OF THE FEMUR

By K. H. Pridie, M.B. Lond., F.R.C.S. Eng.

ASSISTANT ORTHOPÆDIC SURGEON IN CHARGE OF THE BRISTOL ROYAL INFIRMARY FRACTURE CLINIC

It has been proved that the introduction of the Smith-Petersen pin is the ideal procedure in cases of intracapsular fractures of the neck of the femur. Union is more certain and the recovery more comfortable to the patient than with the older method of the Whitman's plaster. English fracture surgeons are not satisfied with the Whitman's plaster, which is an expensive method of treatment. Hospital beds are occupied for many months by patients in plaster and the nursing is difficult because they require skilled attention. A successfully introduced pin removes all the complications of nursing, the stay in hospital is greatly shortened, and the functional result is excellent.

Such workers as Mr. Watson Jones of Liverpool have shown how the operation can be used in even the aged, with very successful results. The open operation, however, is a difficult one and can be undertaken only by experts. Mr. H. A. Brittain and Mr. Eric Lloyd in England and Mr. Thomas King of Australia have done much to popularise the blind technique. About a year ago Mr. Hey Groves designed a very simple form of introducer, which will place a Smith-Petersen pin with mathematical accuracy (see Fig. 1). The whole operation takes eight minutes, with a minimum of shock to the patient and with great ease to the surgeon. So slight is the operative risk that now one can divide the cases of intracapsular fractures into two classes:—

1. Those in which no treatment at all is possible, because the patient is so old and frail that he will die whatever is done.

2. Those in which the closed pinning operation is the method of choice.

In old age the neck of the femur, together with the rest of the bones, becomes decalcified and even a slight fall is sufficient to cause a fracture of this type. The left side, curiously enough, seems to be fractured more often than the right.

Where the general condition is very poor, it is advisable to reduce the fracture under local anæsthetic or gas and put the limb up in the Hamilton Russell position with traction for a week. If complications such as hypostatic pneumonia or mental changes are going to develop, they usually do so in the first week, and the limb is relatively comfortable when the fracture has been reduced and traction applied. As soon as symptoms due to the shock of the accident have subsided and the general condition is good, the operation is performed. In patients whose general condition is good the reduction and the operation can be performed at the same time.

REDUCTION

The blind method can be applied only in cases where perfect reduction can be obtained. It is no use to attempt the pinning operation on an unreduced fracture. If the fracture has been reduced the pinning operation is very simple. Therefore this operation depends on the ability of the surgeon to reduce the fracture completely. In the past year in 37 cases I have been unable to reduce the fracture in 1 case only; this was a subcapital fracture and I found at the post-mortem that the fractured surface of the head of the femur had rotated and was looking forwards and slightly inwards. Only open operation would have reduced it. As the patient was 85 and very frail, this was out of the question.

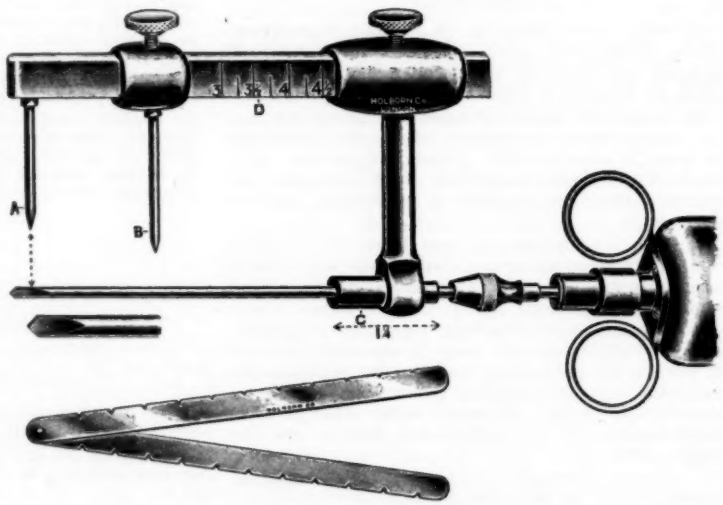

FIG. 1.—The Hey Groves introducer as modified by the author.

Anæsthesia for reduction (local).—Novocain (20 c.cm. of a 2 per cent. solution) is introduced into the capsule of the hip-joint through a long thin needle. After ten minutes the limb loses its pain and spasm and the fracture can be reduced.

Description of reduction of left intracapsular fracture. An assistant applies traction to the limb while it is still in external rotation, until the length as measured with a tape measure is the same on both legs. A roller towel is placed round the femur in

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FIGS. 2 3 4 5 6

FIG. 2.—Typical intracapsular fracture of the neck of the femur before reduction. There is eversion of the distal fragment and the lesser trochanter is raised above the tuber ischii indicating shortening of about ¾ in.
FIG. 3.—Lateral view of same fracture.
FIG. 4.—Antero-posterior view of same fracture after reduction, with the measured gauge in position. The centre of the head is opposite notch 6 on the gauge and the centre of the base of the shaft is on a line joining notches 6 and 8.
FIG. 5.—Lateral view following reduction.
FIG. 6.—Antero-posterior view with pin in position.

the groin and another assistant pulls steadily in a lateral direction. The operator then grasps the limb by the ankle with the left hand and under the knee with his right hand, bends the knee and internally rotates the limb to the fullest extent. During this manœuvre the thigh should be flexed and not hyperextended. Pressure is then applied over the anterior aspect of the neck of the femur with the thumb. Perfect hair-line reduction can be obtained in every case of transcervical fracture by this method, and most cases of subcapital fracture can also be reduced in this way.

OPERATION

After premedication with scopolamine and morphia the patient is placed on an orthopædic table. I use a Shropshire horse with a lignum vitæ pelvic rest, so that antero-posterior and lateral radiograms can be taken without hindrance. The limb, after reduction, is held by an assistant, so that the knee is slightly bent and the patella facing directly upwards. The leg should be in a position of 20° abduction and slight traction kept on it. Mechanical traction is apt to overpull the fracture and produce coxa valga.

The thin metal gauge is strapped to the limb, the apex of the angle situated ½ in. from the anterior superior iliac spine, with one limb following the anterior crease of the groin and the second limb lying down the axis of the shaft of the femur. It is strapped into position with zinc oxide adhesive tape. Antero-posterior and lateral radiograms are now taken to show if reduction is perfect. During the wait of five minutes necessary for the development of the radiograms, the region is painted with iodine, including strapping and guide. The towels are placed in position and the administration of gas-and-oxygen is begun.

The antero-posterior radiogram will show the gauge superimposed upon it (Fig. 4). This picture shows the relationship of the centre of the head of the femur and the centre of the base of the neck to the measured gauge. In Fig. 4, for instance, the centre of the head of the femur is opposite notch 6 and the centre of the base of the neck is opposite notch 8.

The spike marked A is introduced vertically downwards through a small puncture wound made in the skin, ½ in. medial to notch 6 on the measuring gauge. The course of the femoral artery must have been previously localised however, for failure to observe this precaution might conceivably lead to the disaster of puncturing this vessel. It can easily be felt with

FIGS. 7 8 9 10 11

FIG. 7.—Lateral view with pin in position.
FIG. 8.—The femoral artery injected, showing its relationship to the head of the femur.
FIG. 9.—A typical intracapsular fracture of the neck of the femur before reduction.
FIG. 10.—The same case as (9) after reduction and operation.
FIG. 11.—The same case as (9) and (10) two and a half months later, showing firm bony union.

the finger in this region and the spike A placed just external to it. In a dissection it appears to pierce the anterior crural nerve, but I have never found any harm arise from this.

The spike B is introduced on the line joining notch 6 and notch 8, 1 in. inside notch 8 in Fig. 4. In this case the marked gauge has been placed with the vertical limb not in the long axis of the femur, which makes the estimation of the position more difficult. The two spikes A and B are pushed down till they rest hard against the bone and the introducer is then steadied by an assistant who keeps it pressed in position during the introduction of the drill guide.

The guide director marked C is now placed in position. This marks the site of the skin incision. A 1½ in. incision is made on the lateral aspect of the shaft of the femur going down to the muscle, but the muscle is not divided. If the muscle is cut, a branch of the external circumflex artery will cause trouble, for it is deep and difficult to ligature. The guide director is then placed in the incision up against the lateral aspect of the shaft of the femur and the required length of pin is read from the calibration along the horizontal bar of the instrument. A high tensile steel guide 7 in. long with a spear-shaped cutting-point is then introduced through the director C, by means of an electric drill.

Mr. Hey Groves, in his original operation, introduced the guide through the skin by hand, but where the bone is in good condition and not decalcified, it can deflect the guide, causing it to pass anterior to the femur. The manual efforts to pierce the bone often bent the guide and I therefore now make an incision and place the guide director C up against the lateral aspect of the femur and use a high-speed electric drill to introduce the guide.

The guide is 7 in. long and when the chuck of the drill is opposite the end of the crossbar D, the point of the guide is immediately under the spike going down to the head of the femur (marked A).

A Pridie-Watson pin of the correct length is then threaded on to the guide, and driven home by means of a Stiles punch. I do not use the triflange nail-starter to pierce the cortical bone, as the fins of this instrument are too big and tend to cause loosening of the pin. If this instrument is used, there is danger of the pin slipping out. I have had no trouble with pins slipping when they are driven home without the use of the nail-starter punch.

Position of pin.—The pin should be low. The cortical bone over the great trochanter is thin and a pin placed high tends to slip out. If the pin is placed low and obliquely, the cortical bone is thicker and the pin has a firm hold. In subcapital fractures it is important that the pin should get as good a grip as possible on the head without piercing the cortical bone of the head.

By means of the pneumatic hammer and using a pressure of 100 lb. per sq. in., it is possible so to regulate the drive on the pin that the pin will only pass through cancellous bone and will not pierce cortical bone. In this way the pin can be pushed to the furthest extremity possible without fear of arthrodesing the hip. Using a pneumatic hammer there is no disimpaction of the fracture fragments as the pin passes through the distal to the proximal fragment. The impactor need not be used afterwards. This instrument bruises the muscle and injures the bone, causing a rarefying osteitis around the entrance of the pin. This tends to loosen the pin, causing it to slip out.

RESULTS

Using this method in 36 cases, I have been able to secure perfect reduction and a correct position of the pin, the operation never taking more than eight minutes. No ligatures are needed, the operation is very simple, and the patient suffers no shock or after-pain.

As this operation has proved satisfactory with intracapsular fractures, I have tried it in 3 cases of extracapsular fractures. The advantages were the same: (1) the patients stayed in hospital only a fortnight; (2) no splinting was required and movements could be started early; and (3) there was less risk of coxa vara, and weight-bearing could begin early. This method can only be used, however, where the great trochanter, and the bone immediately below it, is still intact with the rest of the femur. If the great trochanter is also shattered the operation is of no value.

The difference between intracapsular and extracapsular fracture can usually be told at a glance. When the fracture is intracapsular, the leg is only partly rotated externally, and there is little shortening. When the fracture is extracapsular, however, the limb is completely rotated outwardly, there is more shortening, and also bruising over the outer surface of the thigh.

The subcapital fracture is still a problem which has not been solved except by the open operation. The results of the pinning of subcapital fractures are not as satisfactory as those of the transcervical fracture. The fragment of the head is often so small that the triflange pin does not get sufficient hold to prevent eversion and reopening of the fracture.

I have described this method—perhaps rather prematurely—in order that others may benefit by this very simple procedure. Intracapsular fractures are no longer the great problem they used to be; in fact, they have become one of the simplest and most satisfactory forms of fracture to treat.

My thanks are due to Mr. Hey Groves, the inventor of the introducer.

PAGET'S DISEASE
WITH MENTAL SYMPTOMS AND CHOROIDITIS

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THE case here recorded was admitted to the South Yorkshire Mental Hospital on March 6th, 1936. In addition to the mental condition which had given rise to certification, the patient presented all the typical signs and symptoms of advanced Paget's disease (osteitis deformans). Changes of the fundi were also found—namely, widespread disturbances in the distribution of the choroidal pigment. This condition, which has been recorded previously in a certain number of cases of this disease, was investigated by Mr. Gordon Mackie, visiting ophthalmologist to the hospital, and a full account of it will shortly be published by him elsewhere.

DESCRIPTION OF CASE

The patient was a man aged 64, and he was admitted in a state of acute confusion.

History.—Ten years previously he had begun to complain of backache, and this had continued ever since. Four years later aching in the legs developed and this

was followed after a year by the development of kyphosis. At this time he noticed that he was requiring larger-sized hats and boots, and glasses for reading. Three years later shortness of breath developed, and he had pain in the occipital region when lying with his head on a pillow. His sight gradually became much worse, so that he could scarcely discern objects held near to him.

For four months before admission he had been confined to bed because of general weakness, difficulty in getting about, and shortness of breath. The first indication of mental abnormality was an increasing restlessness which began after he had been confined to bed for three and a half months. This lasted for three days, then he suddenly became acutely confused. On being visited by his son on the evening of this change, he said "Are you a man from the garage?" whereas he had been conversing quite rationally with him in the afternoon. He became very noisy, demanding to be sent home (he was still in his own house), answered imaginary voices, and had visual hallucinations of people standing at the foot of his bed. He became unmanageable at home and had to be transferred to hospital. He had not had any previous mental illness and there was no evidence of a psychopathic heredity.

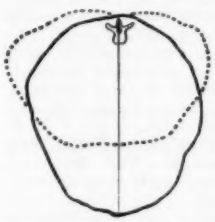

FIG. 1.—Cyrtometer tracing of patient's chest. (Dotted line = normal tracing.)

Clinical findings on admission.—The cranium was much enlarged, the head length being 219 mm., head breadth 178 mm., head height 145 mm. (normal average for the district 194 mm., 150 mm., and 130 mm. respectively). The facial bones were normal in size. The clavicles, sternum, and ribs were enlarged and thickened and kyphosis was conspicuous. The effect of the changes on the shape of the chest is best shown by the cyrtometer tracing (Fig. 1). This was taken at the level of the 9th dorsal spine and is accompanied by a tracing taken from a normal subject at the same level. All the bones of the pelvis, arms, hands, legs, and feet were enlarged, and in the case of the long bones there was exaggeration of their normal bowing (Fig. 2).

Radiograms of the bones involved showed typical changes involving almost every part. These consisted of varying degrees of coarsening of the bone structure, loss of normal outlines with a ground-glass appearance of the surfaces, and in the case of the skull amorphous deposits which gave a cotton-wool effect. The heart was enlarged and fibrillating with a systolic murmur at the apex and accentuation of the pulmonary second sound. The systolic blood pressure was 160 mm. and the diastolic 80 mm. All palpable arteries were tortuous and thickened. Nothing abnormal was found in the alimentary and respiratory system, or in the central nervous system, apart from the changes in the fundi which are described below. Repeated attempts were made to obtain a specimen of the cerebro-spinal fluid, but all were unsuccessful owing to the bony changes in the vertebræ.

Condition of the eyes (Mr. Mackie's report).—The ophthalmic condition is known from November, 1932, until the time of death. At the earlier date one eye showed choroidal atrophy with pigment round the disc, whereas the left showed early pigment changes only. Later records show progress of the condition till the terminal state was one of widespread fine pigmentation with larger aggregations of pigment in the central areas, a hæmorrhage in one eye, and a well-developed milky pellicle, the whole picture being one of severe retinal degeneration with fibrinous exudate somewhat resembling the senile type of "choroido-retinal" degeneration. There was no optic atrophy or motor nerve damage of the type that is attributed to pressure from changes in the skull bones. (A full account of the case, together with the results of microscopical examination of sections, has been submitted for publication elsewhere.)

Laboratory findings.—Blood Wassermann, negative. Urine normal. Blood calcium 11·5 mg. per 100 c.cm. Blood phosphorus 4 mg. per 100 c.cm. Serum phosphatase 20 units. Non-protein nitrogen 35 mg. per 100 c.cm. Blood cholesterol 130 mg. per 100 c.cm. Blood count: red cells, 3,400,000; hæmoglobin, 80 per cent.; colour-index, 1·1; white cells, 4200 (polymorphs 65 per cent., lymphocytes 33 per cent., large hyalines 2 per cent.); no abnormal red cells. Thus, apart from the slight anæmia and the definite increase in the blood phosphatase, the laboratory findings were within normal limits.

Mental symptoms.—He was disorientated to time and place, amnesic and irrelevant in conversation. He was very restless, especially at night; difficult to keep in bed and incontinent of urine and fæces. He had visual and auditory hallucinations, both of which could be increased by suggestion.

Course of illness.—He remained in a state of confusion for eleven weeks and then suddenly became quite clear again, without any gradual transition as is usually found in cases of confusion. There was no residual dementia and he remained mentally normal, although confined to bed for physical reasons, until Sept. 7th, 1936, when he had an attack of acute heart failure and died.

Autopsy (Sept. 9th).—The following visceral changes were found: Lungs: congestion of right and left lower lobes. Heart: enlargement of all chambers; narrowing of mitral ring with abundant calcareous vegetations at the valve margins; similar deposits on the aortic valve cusps, coronary arteries sclerosed but patent; first part of aorta atheromatous. Kidney and spleen: normal. Cranium and contents: dura mater normal; pia-arachnoid milky; cerebro-spinal fluid increased in amount over the cortex, the latter showing slight general atrophy, but being otherwise normal.

Apart from slight dilatation of the lateral ventricles and calcareous deposits in the choroid plexuses, there were no other macroscopical abnormalities. In view of the widespread arterio-sclerosis in the rest of the body the healthy condition of the basal arteries was particularly noticeable. Both cerebellar fossæ were deeper than usual, presenting

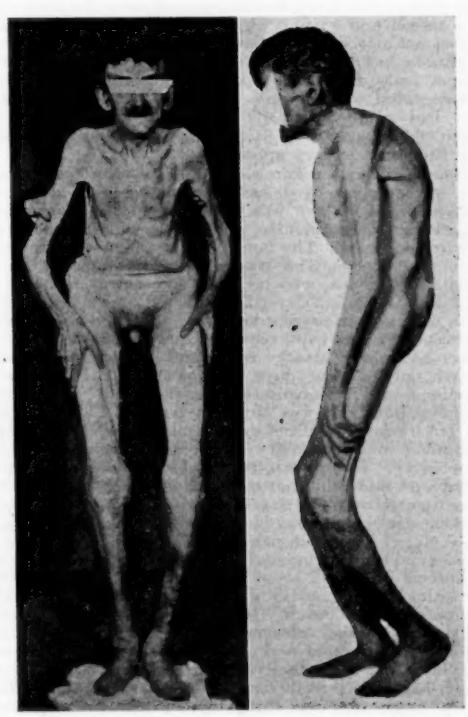

FIG. 2.—Photographs of the patient to show enlargement and bowing of long bones.

the appearance of "slipping down the neck." Subsequent histological examination of a portion of the frontal cortex did not reveal any abnormal changes.

LITERATURE

When first described by Paget (1876) osteitis deformans was not considered to be associated with any mental changes. The original article states that "even when the skull is largely thickened and all its bones exceedingly altered in structure, the mind remains unaffected." However, one case was mentioned in which there were attacks of "vertigo" supposed to be due to the thickening of the ribs, causing fixation of the chest wall, which in turn had led to engorgement of the venous system. Since then mental symptoms in cases of Paget's disease have been described from time to time, but adequate statistics are not available to show the relative frequency of the association. Thus whilst Schrijver (1932) says that it is very common, Hartfall (1931) found no evidence of mental abnormality in the records of 18 patients suffering from Paget's disease admitted to the Leeds General Infirmary during two years. Cases in which this association has occurred have been described by Hann (1910), Stander (1933), Schrijver, Smith (1928), V. Eeden (1928), Kaufman (1929), Hartfall (1931), and Rutherfurd (1931).

In *Hann's* case, that of a female aged 63, the picture was one of gradual mental deterioration with loss of initiative and emotional apathy. Three seizures occurred in the course of the illness, but only one of these was under medical observation and consisted of coma lasting for two days and terminating in death.

Stander described two cases. First a male aged 56, who after suffering from the typical bony changes for sixteen years became indifferent to his business affairs, defective in judgment, and showed impairment of memory. His speech and writing were both retarded and he had occasional attacks of giddiness. Periods of acute mental confusion occurred from time to time. The second was a male aged 66, who became mentally confused, disorientated to time and place, restless, and irritable, and had acute visual hallucinations which could be modified by suggestion. His memory was grossly impaired and there was sensory aphasia.

Schrijver described four cases. The first of them showed a mental picture of delusional insanity with auditory hallucinations. There was some stereotypy of conduct suggesting schizophrenia, and occasional epileptiform seizures occurred. The family history showed a psychopathic tendency. The second was an imbecile with osteitis deformans, who became depressed at the age of 56, refused food, and showed suicidal tendencies. Recovery from the psychotic symptoms occurred. The next was a male aged 81, who after showing bone changes for several years had three attacks of mental trouble. The first lasted only a few days and resembled Korsakow's syndrome—i.e., disorientation to time and place with confabulation. He was also very restless. This cleared up, but a relapse occurred six months later when the same symptoms were repeated. This second attack also ended in recovery. One month later he broke down again into a stuporose and hallucinated state from which he recovered after two months. Between these attacks no evidence of dementia was obtainable. The last case was a male aged 65, who showed radiographic evidence of Paget's disease and also had marked arterio-sclerosis. The mental symptoms resembled those of an arteriopathic psychosis consisting of emotional instability, forgetfulness, depression, and paranoid tendencies. Ultimately he had a stroke and developed parkinsonian symptoms.

Smith has reported two cases, but in the first of these the bone changes merely supervened on a psychosis which has been present for fifty years, so that no ætiological association was likely between the two. In the second case, however, the mental succeeded the bony changes and were attributed to them. They consisted in attacks of giddiness over a period of years, and then the sudden onset of acute mental confusion, which lasted three weeks, during which she had both visual and auditory hallucinations and tended to confabulate.

Van Eeden described a case in which the bony changes were limited to the skull. The patient, a female aged 58 years, had suffered from "dizzy" attacks for eleven years. Then headaches developed, also muscular asynergy, so that she was unable to either walk or sit up, and had incontinence of both urine and fæces. The mental symptoms were again of the Korsakow type, with loss of memory for both recent and past events, and increased suggestibility. She was quite unconcerned about her condition, almost euphoric, and comprehended well, although her powers of concentration were easily fatigued. During the illness she had one period of three weeks in which her memory showed much improvement, but she eventually relapsed into her former state.

Kaufman described four cases, in all of which the bony changes preceded the mental. The first two presented symptoms of organic dementia accompanied by headaches and dizzy attacks, and in one of them there was also impairment of speech and of the movements of one hand. His third case, after a history of bone changes for fifteen years, developed paranoid symptoms, mainly directed against her husband. The fourth was merely one of the association of Paget's disease with another lesion, as a cerebral tumour was discovered at autopsy.

Hartfall has reported a case in which Paget's disease was associated with depression, hypochondriacal delusions, and suicidal tendencies, and similar hypochondriacal delusions were present in the case described by *Rutherfurd*.

DISCUSSION

In 13 of the 16 cases reviewed above it is possible that the bony and mental changes were in some way related to each other ætiologically, the remaining 3 being merely cases of Paget's disease in which mental symptoms occurred as the result of a superimposed lesion of independent pathology. All of these 13 patients were over fifty years of age, and the mental picture was always of a type normally associated with an involutional or senile psychosis. This lends support to the theory that mental symptoms in Paget's disease are the result of arterio-sclerosis. In the present case, however, although there was widespread arterial degeneration all over the body, the cerebral arteries were healthy, and the slight degree of cortical atrophy present was nothing more than what is usually found at his age. Van Eeden postulated that the mental symptoms in his case were due to compression of the brain from diminution of the cranial capacity, but Wyllie (1923) has shown that although the cranial capacity becomes diminished vertically it is actually increased antero-posteriorly. In the present case the presence of increased intracranial pressure could not be excluded as a specimen of the cerebro-spinal fluid was not obtainable but there were no suggestive symptoms, such as vomiting or optic neuritis. However, the deepening of the posterior fossa, as described in this case and in the literature, is bound to have some effect on the minute structure of the brain, subjecting its fibres to unusual strains and stresses. Is it possible that this factor explains the occurrence of mental symptoms in some cases of Paget's disease? A specially interesting feature of the case described here was the suddenness of both the onset and termination of the confusion.

Such conditions usually both begin and end gradually, and relapses are frequent, but here the patient passed from complete clouding of consciousness to mental clarity in a day, and, judging by the history, the onset had been similarly dramatic. Another unusual feature was the fact that there was no evidence of residual dementia.

I wish to thank Dr. A. Pool, medical superintendent of the West Riding Mental Hospital, Wadsley, for permission to publish this case, and Sir Arthur Hall, consulting physician to the hospital, for his valuable advice and assistance.

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INDUCED EPILEPTIFORM ATTACKS AS A TREATMENT OF SCHIZOPHRENIA

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PSYCHIATRISTS have long recognised that in certain mental disorders improvement sometimes follows "shocks." In 1929 Nyirö and Jablonsky, reviewing the reports of the Budapest-Lipótmezo Mental Hospital, observed that in a number of schizophrenics remissions had followed attacks of epilepsy. In 1930 Müller reported two cases of catatonic schizophrenia which recovered after having epileptiform fits. These observations and the results of his own experiments prompted von Meduna (1934) to evolve a form of treatment by inducing fits artificially.

He first tried intramuscular injections of camphor in oil but these had to be discontinued because of the large dose required. Eventually, pentamethylenetetrazol, known as Cardiazol (Knoll), proved to be more practical and effective.* He has since treated a large number of recent as well as chronic cases of all forms of schizophrenia, irrespective of antecedents, with very good results. No fatality, complications, or late sequelæ were observed. His conclusions are that the best results are obtained in early cases with 6–12 months of psychosis and in those that responded with strong fits to the minimum dose of cardiazol. A thorough physical examination is essential, before treatment: it must include complete examination of urine, and estimates of blood sedimentation-rate, blood-urea, blood-sugar, and blood pressure. All febrile conditions and pulmonary, cardiovascular, and renal diseases are absolute contra-indications.

The technique is simple. All previous medication, especially of sedatives, should be discontinued for a few days beforehand. Cardiazol is supplied in ampoules of 1·1 c.cm. solution, each containing 0·1 g. of cardiazol in 1 c.cm. It is injected intravenously once or twice a week, with at least two clear days between each injection. The patient, having had an enema the previous evening and no morning meal, is kept in bed and injected at 8 A.M. The initial dose should be 0·5 g. of cardiazol and if this dose does not produce a fit, it should be increased at the following injection by 0·1 g. until the fit-producing dose is reached. This is then repeated at subsequent injections. The highest dose reported is 1 g. The fit occurs ½–1 minute after the injection, lasts for about 2 minutes, and has all the dramatic appearance of a grand mal attack. At the onset of the fit, the tongue should be protected by placing a wooden wedge between the jaws. The patient remains dazed afterwards for a short time and restlessness may follow, but this is temporary and should not be controlled by sedatives. More often the patient falls asleep, and he should remain in bed for the rest of the day. Food should not be given for 4–5 hours after the fit because there may be vomiting. No other complications have been met with. The number of fits required varies considerably, the average however being 30. Remissions have been obtained with as few as 4 but in general if no mental change is noticed after 20 fits the treatment is stopped.

Epileptiform fits occur in hypoglycæmic coma during treatment with high doses of insulin, and although dangerous to life because of the status epilepticus that may set in, they are generally believed to have a beneficial effect on the mental condition. James, Freudenberg, and Cannon (1937) report that they have induced occasional epileptiform fits by injecting cardiazol into some of their patients undergoing high-dosage insulin treatment, on days when insulin is omitted; for the cardiazol fits are less dangerous than those of hypoglycæmia and may be used as a supplement.

Induced epileptiform fits, either alone or in combination with insulin coma, have been used at the Three Counties Hospital for several months with fairly good results. Although no imposing figures of recoveries can yet be produced and the treatment is very active and somewhat rough, no ill effects have been observed in carefully selected healthy young patients. The method appears especially beneficial in early psychoses especially the stuporose and catatonic.

I am indebted to Dr. N. McDiarmid, medical superintendent of Three Counties Hospital, for permission to carry out this treatment and to publish this paper.

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* Cardiazol is a rapidly acting circulatory and respiratory stimulant. It has come to be used in the convulsion therapy because in sufficiently high doses it excites the central nervous system, and as it contains no paralysing component it induces convulsions with safety.

CONVULSIVE THERAPY IN SCHIZOPHRENIA

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SINCE 1934 von Meduna of Budapest has been treating cases of schizophrenia by the administration of convulsive drugs. He believes that there is a biological antagonism between schizophrenia and epilepsy, and that the production of major convulsions can cause remissions. In a series of 110 patients he has secured remissions in 54 cases whose duration varied from less than six months to more than five years. Experience of the so-called insulin shock treatment of schizophrenia has shown that the hypoglycæmic convulsion is therepeutically useful, and it is reasonable to suggest that any major fit, however caused, will have a good effect.

METHOD

At first Meduna used camphor by intramuscular injection, but he later found the proprietary drug, Cardiazol, more suitable for the production of fits. In small doses this drug is a respiratory and

circulatory stimulant, its chemical name being pentamethylentetrazol. (It is also known in the United States as Metrazol.) The solution that I have used is of 10 per cent. strength, and is prepared according to the following formula: cardiazol powder 1·0, di-sodium phosphate 0·01, distilled water ad 10·0. The solution may be sterilised by heating for thirty minutes in a water-bath at 100° C. The solution is best prepared daily.

The patient is in bed, and the stomach should be empty. The initial dose is 0·5 g. cardiazol powder in solution—i.e., 5 c.cm. of the 10 per cent. solution. The injection is made into the veins at the elbow, and I use a needle of 0·90 mm. diameter. The epileptic fit comes on almost instantaneously, often with a premonitory cough. Usually the convulsion is a typical major epileptic fit, but I have seen fits composed of tonic spasm only, and also mental convulsions in the form of furor. The only attention necessary during the fit is to restrain violence, and to insert a soft tampon between the jaws, which never fail to open and allow time for this procedure. It is essential that the injection be made quickly, and Meduna advises a rate of 1 c.cm. per second. In the same patient I have injected 9 c.cm. slowly and failed to produce a fit, whereas the next day the rapid injection of 5 c.cm. at once resulted in a convulsion. If the initial dose of 5 c.cm. does not produce a convulsion, the dose is increased next day by 1 c.cm. and so on. However, with increased skill it is usual to find that 5 c.cm. suffices with most patients. As the solution is somewhat irritating care must be taken to make sure that the needle is truly within the vein.

After the fit the patient may or may not have a short period of coma; in any case rest in bed for some five hours is advisable. Mental improvement may occur after two or three fits, or may be delayed until some 15–20 fits have been produced. Meduna advises that the treatment be continued until 20 fits have been produced, whether there is improvement or not.

ILLUSTRATIVE CASE

A woman, aged 33, was admitted to hospital on April 19th, 1935. She had become depressed a few days after the death of her father, which took place some three weeks before admission. Her sister had been a patient in the hospital on two occasions.

On admission the patient was in a state of resistive stupor, which persisted until September, 1935, when she began to talk. Her utterances were nonsensical and have continued thus. A mental examination on Feb. 9th, 1937, showed no apparent dementia. She understood questions, and so far as her incoherent state allowed she was coöperative and her responses usually contained the correct answer. However, usually she spoke nonsense, and made use of neologisms. In answer to the question, "What is your name?" she replied, "The Holy Martyr of the world. They forged my name. Ki-nacki-ki-nooki-ki-nacki. Miracles of the blessing of the pure air. They said, holy ki-nacki-ki-teeren, they said. You can understand what I'm saying." The principal clinical features were the absurd incoherence, the silly smiles and grimaces, and the general religious tone of her utterances. She was also aurally hallucinated.

From Feb. 10th, 1937, until April 23rd she was treated by Sakel's hypoglycæmic method. Neither during nor after her ten weeks of this treatment did she show any improvement mentally. The insulin treatment was directed to the production of daily periods of coma, and once she had a major hypoglycæmic convulsion.

On May 22nd the cardiazol treatment was begun, and after the second induced convulsion mental improvement was noticed. She no longer uttered the nonsensical phrases described above, and it was possible to hold a sensible conversation with her. In addition her hallucinations diminished markedly. However, she was still apathetic. Up to the present she has had only 7 fits induced and further improvement is at least likely. Even though this improvement should disappear, the case is still of interest as showing the effect exerted by the cardiazol fit on schizophrenic insanity.

POSSIBLE ILL EFFECTS

Meduna believes that the convulsions alter the humoral environment so that it becomes unfavourable for the development of schizophrenia. These views, however, are still speculative, and it may later be found that the good effects are solely due to a non-specific stimulation of cerebral cells that had become functionally inactive.

In a series of 1000 induced convulsions Meduna has seen no serious complications. He quotes the results of renal and electrocardiographic investigations as follows: "... the cardiazol convulsions exert no deleterious and certainly no permanent influence on a healthy system, particularly not on the circulatory system." In my own short experience of some 60 induced convulsions, the only ill effects seen have been slight and short-lived attacks of vomiting, transient attacks of moderate tachycardia, and the occasional thrombosis of the injected veins. In the present state of our knowledge, however, it would be in the highest degree unwise to apply this treatment to any patient who showed signs of organic disease. With these provisos, it may be said that the cardiazol convulsion is no more dangerous than the idiopathic epileptic fit.

For permission to publish this report I am indebted to Dr. J. Harvey Cuthbert, medical superintendent of West Ham Mental Hospital. For a translation of Meduna's book I am indebted to Knoll Ltd. of Welbeck-street.

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A PENETRATING STAB WOUND OF THE HEART

OPERATION; RECOVERY

By William Gissane, Ch.M. Sydney, F.R.C.S. Eng. and Edin.

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FORMERLY ASSISTANT MEDICAL OFFICER AT THE HOSPITAL

Since Rehn published his original case of a successful operation on a stab wound of the heart in 1897 many such injuries have been reported. Yet, in this country, the injury is still an extremely rare one; the habits of our countrymen have not changed since Guthrie wrote in 1848: "London, the great metropolis of the British Empire, with its two millions of inhabitants, has been nearly exempt from injuries of the heart—sensible people not being disposed to stab each other, whilst madmen try to kill themselves in a different way."

The report of a case with its radiological and electrocardiographic records appear to be of interest.

A man, aged 23, was stabbed in a fight on July 31st, 1936. He collapsed "through inability to get his breath" and was unconscious for a short period. Seen by one of us twenty minutes after the injury he was then quite conscious but in a state of collapse. He was pale, cyanosed,

sweating, and dyspnœic; he had vomited once. He complained of pain over the heart. There was no dilatation of the veins of the neck. *On examination* the pulse was feeble and the rate 120. A small stab wound ¾ in. long was seen over the 7th left costal cartilage 2 in. from the middline; and the clothes were saturated with dark blood oozing from this wound. By percussion no increase in cardiac dullness was detected—the absence of this sign was confirmed by three examiners. The heart sounds were audible but muffled. In the *abdomen* there was rigidity of the upper left rectus. Diagnosis: perforated wound of the heart. He was given morphia gr. ¼. Re-examined just before operation (40 minutes later) the patient's condition had improved considerably, and he spoke cheerfully. The pain over the heart though still present was "not so bad." His colour still pale but now not cyanosed; he was less dyspnœic. Pulse still feeble, rate 120. Heart: no increase of cardiac dullness detected clinically. Sounds audible but still muffled. The stab wound was not bleeding. We were now less certain of our diagnosis.

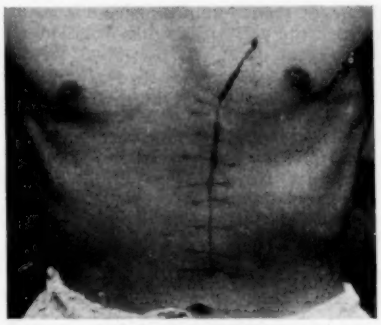

FIG. 1.—The incision.

Operation.—The wound was first excised and extended downwards slightly. After retraction of the skin edges, our impression was that the peritoneal cavity had been opened by the injury; accordingly the incision was extended downwards and the peritoneal cavity exposed, but this was clean. Carrying the incision vertically upwards, the 4th, 5th, and 6th costal cartilages were divided near the sternum (see Fig. 1). Tuffier's rib spreader was introduced and the internal mammary artery tied. The pleura was now pushed away and after mopping up the blood the pericardium was seen with a small perforated wound. The pericardium was next opened widely and found to be full of blood. Nothing could be seen of the heart in spite of the use of a sucker to clear the field of blood. A hand was passed inside the pericardium and under the heart, which was gently levered upwards into the wound. This manipulation had no apparent effect on the heart's action. Now the wound on the anterior surface of the right ventricle was seen, it was about ¾ in. long, vertical, and situated approximately ¾ in. to the right of the interventricular furrow and opposite the 4th costal cartilage. From this wound blood welled during diastole, but there was no loss during systole. The apex suture was now passed, but did not prove satisfactory as it soon cut out. Relying on the hand under the heart to steady the organ, two control sutures were passed, one at either end of the wound, and their ends crossed but not tied. Holding the ends of the crossed sutures taut approximated the edges of the wound, prevented further loss of blood, and rendered the closure of the wound by interrupted thread 60 sutures easy. The sutures were passed and tied during diastole. After inspecting the suture line and noting that no blood escaped the control sutures were removed and the heart dropped back. To our dismay the pericardium was again seen to fill up with blood. The left hand was introduced into the pericardium and the index-finger felt and entered into a second wound situated on the diaphragmatic surface of the right ventricle. By hooking this finger inside the cavity of the ventricle the heart was slowly delivered into the wound and with the right hand the two stay sutures were passed. These sutures were crossed and held as before and the finger removed. This wound was closed with four interrupted sutures, passed and tied during diastole. The heart was dropped back and the pericardium sucked dry. No more bleeding was seen. No attempt was made to close the pericardium. The soft tissues were sutured and the skin closed around a tube drain in the open pericardium.

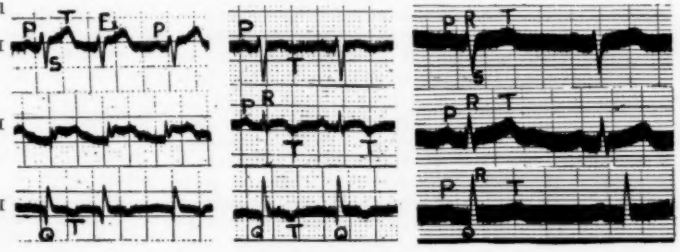

FIG. 3.—Electrocardiograms taken two days, three weeks, and five months after operation.

Progress.—The patient's condition at the end of operation was fair. He was transfused with 400 c.cm. of blood given slowly. On the next day, August 1st, 4 oz. of blood-stained serum aspirated from drainage-tube. Tube removed. Heart sounds of good volume, clear, and regular. Blood pressure 104/70 mm. Hg. He complained of precordial pain and shortness of breath. On the third day he had a bad attack of precordial pain, dyspnœa, difficulty in swallowing, and he was pale and cyanosed. At the level of the third interspace on the right side of the sternum a splashing sound was heard with the heart's beat. Blood pressure 110/80 mm. Hg. Attack lasted 40 minutes and was relieved with morphia gr. ¼. On the sixth day he got out of bed during the night, then realising where he was he returned to bed again after a walk of some 40 yards; no ill effect after this exercise. Stitches removed on the eighth day and the wound healed by first intention. By X ray the pericardial shadow is a large one but he had no symptoms. He was allowed out of bed on the twenty-eighth day and was discharged from hospital on Sept. 9th, able to walk and ascend stairs without discomfort. He was free from any symptoms. He is

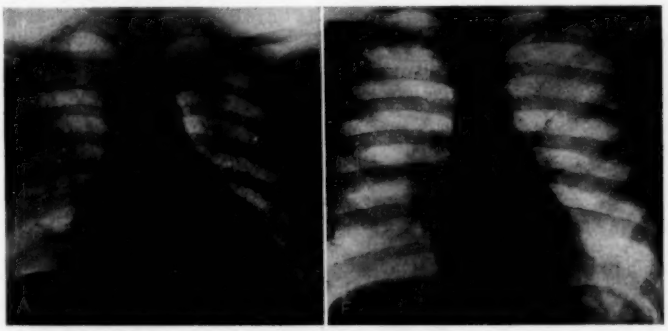

FIG. 2.—Radiograms of heart: A, five days after operation for stab wound, showing effusion. B, one month later: showing complete absorption.

now at full hard manual work and without any symptoms.

Serial radiograms showed at first a moderate pericardial effusion, as is seen in Fig. 2 A, taken on the fifth day after operation; that the shadow was largely due to an effusion was more apparent on screening a few days later. Fig. 2 B taken within one month shows a complete absorption of the effusion. Intermediate radiograms showed the stages in the absorption.

Electrocardiograms.—We also reproduce here two of the series of electrocardiograms, the first taken on the second day after operation and the final one taken five months later when the patient had returned to really hard work. The report is by Dr. Paul Wood: "Fig. 3 A shows sinus tachycardia, premature auricular ectopic beats, low voltage, right axis deviation, elevation of the R–T segment in leads I and II, and inversion of T3 with a moderate Q3. Fig. 3 B is normal apart from axis deviation. In lead III it should be noted that Q is less evident and that T is now upright. Taking the series as a whole there are pronounced changes in the R–T components in all leads, but especially in lead II. They are of the type which is characteristic of myocardial injury, but which has been described in association with pericardial effusion."

COMMENTS

Signs and symptoms.—Our experience of stab wounds is limited in number. We have operated upon only four cases in which a stab wound has been associated with the injury of some viscera. In none of these has the skin wound given us help as to the direction the blade has taken. In this case it was situated outside the surface markings of the heart. The recovery of this patient during the 40 minutes preceding operation may have been due to an injection of morphia gr. ¼, but it caused us to doubt our original diagnosis. He still had precordial pain, dyspnœa, the pulse was weak and rapid, he was pale but not now cyanosed. His wound had ceased to bleed. The clinical picture of tamponade of the heart was less obvious; yet at operation 1200 c.cm. of blood were collected from the pericardium before suture was begun. We do not suggest that this amount of blood was compressing the heart before operation, but it does seem remarkable that the clinical signs were improving in spite of the presence of an excessive amount of blood in the pericardial cavity.

Operation.—The description of the operation may be difficult to follow if it is not understood that there were four coöperating hands during the procedures outlined. The heart's action was vigorous throughout and none of the manipulations had any apparent ill effect on its action. During the operation we attempted to steady the heart and control bleeding by the grip recommended by Sauerbruch.[1] The third finger of the left hand is passed along the transverse sinus and compressing the vena cava and pulmonary veins between this finger and the 4th and 5th fingers, and compressing the aorta and pulmonary artery between the finger in the transverse sinus and the index-finger and thumb in front of the vessels. We were not successful. We have since tried this grip during an operation for pulmonary embolism, through a more suitable exposure, but again without success; it appears to be a difficult manipulation. We would condemn the control suture through the heart's apex. When holding this suture the sensation of playing a lively fish at the end of a line, that might at any moment get away, was very real. In fact, this suture did cut out and the wound it made bled and required separate suture. In suturing the heart at first a needle-holder was used, but two needles broke and thereafter they were passed by hand. The use of a needle-holder is undoubtedly an error of technique when passing sutures in such a lively organ as the heart. The omission to close the pericardium was intentional. The mortality and the incidence of infection have been higher in these cases in which the pericardium has been closed. We recorded our dismay on finding the second wound in the right ventricle. Had we kept in mind the situation of the skin wound we should have expected and been prepared for it.

We have described our operative findings in detail because the case is an unusual one in this country. Of the many recorded cases, a close follow-up by X ray and electrocardiographic records is also unusual. The details of this case will be published later by Dr. Paul Wood.

[1] Sauerbruch, F. (1925) Chirurgie der Brustorgane, Berlin.

Clinical and Laboratory Notes

ABORTUS FEVER TREATED WITH FOUADIN

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Abortus fever is now generally recognised as a cause of prolonged pyrexia. The actual incidence of the disease is difficult to ascertain as it is not compulsorily notifiable, but it appears to be rising. Dalrymple-Champneys [4] was able to trace only 5 cases occurring in this country in 1927; in 1932 he was able to obtain evidence of 57. In America similarly the incidence of the disease has increased rapidly.

Numerous papers [1–3, 5–9] have appeared on the treatment of the disease, but as spontaneous remissions occur, it is hard to assess the value of the different methods employed. Specific vaccines have been most widely used, particularly in America, and the results are said to have been good. The reports seem to show, however, that such good results are obtained only when sufficient of the vaccine is administered to give rise to severe systemic symptoms. Non-specific vaccines, such as T.A.B. [2, 5, 6] sterile milk and toxic broth filtrates of the specific organism, have been used to produce "protein shock," but all have the disadvantage of requiring, to be effective, a general systemic reaction which is always inconvenient and may be dangerous.

Various chemical agents have been tried.[3] Neumann [7] has recently described the treatment of 8 cases with the drug Fouadin, an antimony preparation used in the treatment of bilharziasis. He obtained good results in all cases. Tanner [8] also has reported favourably on the use of fouadin in the treatment of one case. The following is an account of treatment of a case with this drug followed by recovery:—

A man aged 29, a bricklayer, was admitted to the Royal Hospital, Wolverhampton, on Dec. 7th, 1936, because of continued pyrexia. There was a history of vague malaise for a month, and a week before admission he had had rigors on each of two successive days, with fever every evening. He had no other complaints. No past illnesses, nothing significant in the family history. He was a well-nourished, well-developed young man, of toxic appearance. Temperature 99° F., pulse 90; spleen just palpable; no other physical abnormality found. A blood count showed: hæmoglobin 85 per cent., red cells 4,780,000 per c.mm., colour-index 0·89, white cells 5700 per c.mm. (polymorphonuclears 56 per cent., lymphocytes 38 per cent., monocytes 6 per cent.),

The blood-serum agglutinated *Brucella abortus* suspensions in all dilutions up to and including 1 in 2500. He continued to have an evening temperature as shown in the accompanying Chart.

On Dec. 18th he was given his first injection of 1·5 c.cm. of fouadin; two days later he received 3·5 c.cm., and thereafter he had 5 c.cm. on alternate days until a total of 45 c.cm. had been given. By Dec. 22nd his temperature had subsided and he had lost his toxic appearance. He was discharged from hospital, quite fit, on Jan. 9th,

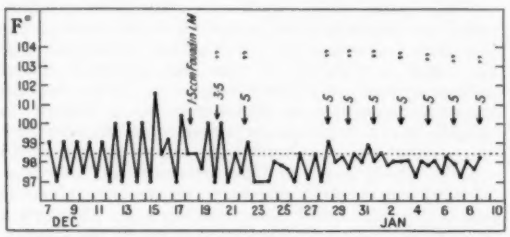

Chart showing course of temperature after intramuscular doses of fouadin (1·5 c.cm., 3·5 c.cm., and 5 c.cm.).

1937, five weeks from the time of his first rigor. He has remained apyrexial and in good health up to the time of writing (June, 1937).

On Jan. 7th, 1937, three weeks after treatment began, his serum agglutinated *Br. abortus* suspensions up to a dilution of 1 in 500. On May 28th the titre was reduced to 1 in 50.

So far the recorded results of undulant fever with fouadin have been encouraging; further trial is justified.

I am indebted to Dr. J. H. Sheldon, senior physician to the Royal Hospital, Wolverhampton, for permission to publish the notes of this case and to Dr. S. C. Dyke, pathologist to the hospital, for assistance and advice.

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SEVERE STREPTOCOCCAL INFECTION TREATED WITH PRONTOSIL AND ANTISERUM

BY O. P. CLARK, L.R.C.S. Edin.

THE patient, a healthy married woman of 37, mother of three children, all healthy, was first seen at the house of her parents, where she had arrived that morning for convalescence after three weeks in a municipal hospital. She gave a history, subsequently confirmed by correspondence with the medical superintendent of the hospital, that three weeks previously she had been admitted with an abortion at three months. Dilatation and curettage was performed for this. At no time whilst she was in the hospital had she run much of a temperature, and she was completely apyrexial when discharged. On examination she was obviously very ill, with a temperature of 104° F. and pulse-rate of 120. The uterus was enlarged and tender and thick pus was coming from the external os. The left fallopian tube was readily palpable and tender.

An intramuscular injection of Prontosil Soluble (5 c.cm.) was given, together with 10 c.cm. of puerperal streptococcal serum (Parke, Davis and Co.). After 24 hours the patient showed no improvement, and was accordingly removed to a nursing-home, where she was observed for a further period. At the end of a further 24 hours her temperature had risen rather suddenly to 106° F. and, on examination, signs of generalised peritonitis were evident. Under a general anæsthetic, through a median subumbilical incision, the abdominal cavity was explored and was found to contain a large quantity of thin offensive pus. The uterus and adnexa were acutely inflamed. There was no sign of a perforation of the uterus or of the vaginal fornices. A large drainage-tube was then inserted and the abdominal wound was closed. Prontosil (25 c.cm.) was injected into the gluteal region whilst the patient was still under an anæsthetic. On returning to bed she was in extremis with a temperature of 104° F.; pulse-rate 124. Examination of the pus gave a pure culture of hæmolytic streptococci.

For the next few days there was free drainage from the tube and the patient ran a swinging temperature. Pus became thicker and more offensive. On the sixth day the temperature was 100° and the pulse-rate 104. Both temperature and pulse subsequently rose again rather suddenly to 103° and 116 respectively and signs of consolidation of the base of the right lung developed. Expectorant mixtures were given and an electric hot pad was applied continuously to the right chest. By the 14th day it was clear that the entire right base had solidified. The temperature continued to be hectic and the patient was still terribly ill. During these 15 days she had received on an average 10 c.cm. of prontosil soluble intramuscularly each day. On the 17th day she developed a typical scarlatinal rash and 20 c.cm. of antistreptococcal serum was given. Three days later (on the 20th day) free desquamation began and with it the temperature and pulse-rate fell. In the meantime the prontosil and antistreptococcal serum were administered each day. A radiogram taken at this time showed complete consolidation of the right lower lobe. In the course of the next few weeks pulse and temperature gradually settled down and the wound continued to discharge freely. Up to the end of the fifth week the patient had received altogether 150 c.cm. of prontosil and 60 c.cm. of antistreptococcal serum, and, apart from a rather rapid pulse at times, appeared to be making progress.

During the sixth week she suddenly developed thrombosis of the right axillary vein with moderate swelling of the right arm. At this time progress was such that it was considered safe to attempt the oral administration of Prontosil Album (sulphanilamide). Two tablets (each of 0·3 g.) were given three times a day. This was continued for some weeks, the patient receiving in all a total of 150 tablets. Progress was slow and uneventful, and the patient was eventually sent home after 14 weeks in the nursing-home. Her temperature and pulse were normal and the abdominal wound was nearly closed. The right base was still completely dull to percussion, and auscultation. Pelvic examination was negative. She began menstruating some weeks later.

(1) It is clear from this case that in "straightforward" abortion, even with proper institutional treatment, including dilatation and curettage, the patient is not necessarily entirely out of danger and free from the possibility of a sudden recurrence of infection at the end of three weeks, when she is normally discharged to her home.

(2) The case also shows that the rather unusual and alarming sequence of abortion, pyometra, pyosalpinx, generalised peritonitis, septic lobar pneumonia, septicæmia, and septic thrombosis is not necessarily fatal.

(3) Administration of massive doses of prontosil, together with a suitable antiserum, seemed to be of definite value as an adjunct to surgical drainage.

My acknowledgments are due to Mr. Ralph Brooke, who performed the operation.

Worthing, Sussex.

MEDICAL SOCIETIES

THE ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION

THE ninety-sixth annual meeting of this association took place at the County Buildings, Ayr, on July 7th, 8th, and 9th. Dr. DOUGLAS MCRAE, medical superintendent of Glengall Mental Hospital, Ayr, presided. His address consisted of

Some Observations on the Care of the Insane

He dealt first with the question of boarding-out, which he defined as the placing of patients of a suitable type in private dwellings. This system had been, he said, for many years an organised part of the lunacy administration of Scotland. It arose from the recognition that not all insane persons needed care and treatment in mental hospitals. These patients were often described as incurable, harmless, easily managed. In 1900 nearly 24 per cent. of the total registered lunatics in Scotland were pauper lunatics housed in private dwellings. Shortly after the war there occurred a reduction in the number of guardians available for such patients, though now the leeway was being to some extent made up. A good deal of the routine work in mental hospitals was done, under supervision, by mental patients, a sensible policy from the points of view of both therapy and economy. If this proportion could be boarded out it might do something to arrest the rate of erection of new buildings to accommodate the insane. On the other hand, in the speaker's long experience he had seen many boarded-out cases returned to the mental institution in a condition of undoubted neglect. At the end of 1936, 83 per cent. of the women patients in Glengall Mental Hospital—excluding mental defectives—were over 40 years of age; 65 per cent. were over 50; and 17 per cent. were over 70. Twenty years ago there were in the institution only 12 able-bodied male patients who could not be usefully employed; whereas to-day there were 100 male patients in this category, either too grossly demented to work or refusing to do so. This showed a remarkable change in the type of patients. There was, he declared, no evidence that patients were now kept in mental hospitals—in preference to being boarded out—in consequence of their usefulness to the institution.

Dealing next with the much-discussed question of the voluntary patient, Dr. McRae said that there must be no element of coercion. Many cases were sent for admission on a voluntary basis because the doctor wished to avoid the responsibility of certifying them, and also to save themselves from the anxiety which mental cases often brought. Sometimes exhaustion of the patience and sympathy of the relatives sought refuge in the same course. Often this seeking for voluntary admission was the result of the suggestion of relatives and it was easy to transform this suggestive attitude into one of coercion. Often, too, questions of finance entered more largely into the policy to be pursued with regard to the patient than did considerations for his real welfare. For example, relatives of rate-aided patients whose insurance benefit had been accumulating for months or years sometimes pressed for the patient's discharge to their home so that they might receive payment of that sum; when it had been spent they applied to have the patient recertified and returned to the mental hospital pending a further accumulation. The president contended that the patient's application for admission should only be made out and signed after the medical superintendent had examined the patient and agreed to the admission on a voluntary basis. He could be detained as a guest for three days pending this examination.

Dealing next with certification, Dr. McRae deprecated propaganda which kept alive the idea of the so-called "stigma" of certification. This point of view was not always in the best interests of the patient himself, or of the security of his estate. In his experience it was uncommon for a patient to exhibit any concern as to whether he was certified or not, and any resentment he might express could usually be traced to the attitude of relatives. Another source of objection to certification in recent years was the need for disclosure to emigration authorities that insanity had existed in the family. The criminal who found himself undergoing "an indeterminate sentence" in a mental hospital often complained that he would rather have stood his trial and served a definite term of imprisonment, so that he would know when he could regain his liberty. One alleged drawback to certification was the difficulty of obtaining employment after discharge. The president, however, had known many former employers who had kept positions open pending recovery. Another misrepresentation was concerned with the popular conception of the padded room in mental hospitals. Though the General Board of Control, in their report for 1935, had ranked the disuse of the padded cell as among the more evident modern improvements, the president did not think this method of dealing with anxious and difficult cases should be termed "obsolete." The padded room in his own institution was often out of use for nine months in a year, but there were occasions when three or four such apartments would prove a great boon to both patients and nursing staff.

The impression that mental patients lived behind locked doors was unjust. There would rarely be a need for locked doors if mental hospitals could be provided with larger staffs. At Glengall House 55 per cent. of the men and 60 per cent. of the women were resident in wards the doors of which could remain open until dusk. The president also touched on the question of divorce on account of incurable insanity. He said it was quite common nowadays to be presented with an authentic history ascribing the wife's mental illness to neglect, abuse, and ill-treatment by her husband. In most female cases of general paralysis the syphilitic infection was due to the husband's misconduct. He held a higher standard of citizenship on the part of people as a whole to be the only hope of eradicating the greatest of all social evils.

On the subject of psycho-analysis the president agreed with Dr. McDougall that the pan-sexual doctrine tended to spoil the proper relations between parents and children; parents had been rendered fearful of manifesting affection for their children lest it form the dreaded œdipus complex. The Freudian psychology had promoted over-emphasis on sex. The president's final theme was contraception. He regarded contraception as an interference with the natural process, which could not be carried on with impunity. Though admittedly economic and other conditions made it very difficult for parents to bring

up many children in comfort, the declining birth-rate was a matter of grave national importance.

At the discussion on the

Circulatory System and the Psychoses

Dr. F. L. GOLLA dealt with the physiology of the cerebral circulation, of which much remained to be learnt. For example, circulatory disturbance was now held to play a large part in the causation of epilepsy. The importance of the circulation in the brain was obvious: the need of the nerve-cell for oxygen was overwhelming in comparison with the needs of any other tissue of the body. The brain represented 2 per cent. of the body-weight, but it accounted for 10 per cent. of the total body consumption of oxygen; and the brain cortex consumed about ten times the amount required by the white matter. The nerve-cells, which were chiefly responsible for the consumption of oxygen, represented 1 to 2 per cent. of the total volume of the brain; hence a small amount of brain matter made a very great oxygen demand. The amount of blood flowing to the brain was difficult to determine even approximately; it was probable that 100 grammes of brain received 140 grammes of blood per minute. Was there, he asked, reason to think that the metabolism of the cortex increased in response to increased intellectual activity or increased sensory stimulation? This problem could be studied by using the temperature of the brain in different parts as a check on the amount of blood flowing to that part, by means of thermo-electric couples inserted into the brain. Drugs such as strychnine caused a rise in temperature, as also did pain. Attempts to find out the oxygen consumption of (1) a stimulated brain and (2) an inhibited brain, showed enormous variations. Still, it was near the truth to say that an animal undergoing strychnine convulsions consumed 700 per cent. more oxygen than did a resting animal; with cocaine the percentage was 120. An animal poisoned to the point of complete anæsthesia by luminal had its oxygen consumption reduced by 20 per cent.; when barbiturates were used the reduction was 30 to 40 per cent. In seeking for the mechanism difference one was baffled by the anastomosis between the two carotids, while from the arterial point of view there were other factors to be considered, notably the blood coming from the vertebral arteries. It was found that there was a large variation between the oxygen consumption and the CO_2 given off at different parts of the brain, and that seemed to depend primarily on the presence or absence at the part of synapses, where the oxygen consumption was very great. Possibly there occurred in the central nervous system, in addition to paths, a circulation of chemical bodies. That chemical reactions could be infinitely short was exemplified by injecting male hormone into an animal castrated from birth, which at once began an imitation of male sexual movements. That could not be due to circulatory turgescence. CO_2 was an important means of dilating the blood-vessels of the nervous system, though it constricted them elsewhere. Caffeine also caused a dilatation of the blood-vessels of the cortex.

Dr. A. C. P. CAMPBELL said that apart from the observations of Pfeiffer on the human cortex, little had been attempted in the way of measuring the relative vascularity in the human brain. Measurement of vascularity was most easily done on injected brains. Dr. F. A. Pickworth's beautiful technique in his capillary stain method had provided a valuable help. Part of Dr. Campbell's research was to ascertain how cats varied in regard to metabolic activity, and to see if it was possible to correlate varying vascularity with selective lesions of ischæmic nature. By a series of slides he demonstrated his methods of making quantitative estimations of the relative density of the capillary meshwork in a series of different areas of grey matter of the cat's brain. He had focused his attention primarily on the basal ganglia, these being compared with areas of the cerebral and cerebellar cortex. It was found that the different basal ganglia showed considerable differences in vascularity, the globus pallidus being the least vascular, and the lateral geniculate body the most vascular of all the areas examined. Observations were also made—though not so elaborately—on brains of monkeys and humans.

Dr. A. MEYER read a paper, illustrated by slides, on the histopathological criteria of vascular disturbances of the brain. He said that vascular lesions identical in appearance with the sequelæ of organic diseases of blood-vessels had been found in a great variety of conditions, such as epilepsy, hypertension, cardiac disease, psychoses associated with infectious and toxic conditions, head injuries, in which no organic lesion of blood-vessels themselves could be demonstrated. Ricker, Spielmeyer, and others advanced the theory that these lesions owed their origin to functional disorder of the vascular system, this common factor accounting for the identity in histological appearance notwithstanding the profound ætiological differences. Dr. Meyer's work consisted in an attempt to establish the criteria for the histological diagnosis of vascular lesions, and he said that certain specially vulnerable regions of the brain served as indicators in the pathogenic analysis. He also offered a definition of the functional disorder which was responsible for the lesions.

Dr. PICKWORTH dealt with cerebral ischæmia and mental disorder, of which the two main characteristics were mental dysfunction and a limitation of mental development with age. Mental disorder presented such wide differences from well-known acute or chronic bacterial and virus diseases that any simple infectious agent as a cause of the clinical condition was quite unlikely. It was strange that the phenomena of mental effort, emotion, and instinct should have been for so long interpreted solely through analogy with the lower nerve reflexes. Mental and emotional potential states existed without necessarily having any nervous concomitant, and this consideration opened up a new histological approach to the study of mental disorder. He had now been able to show that mental disorder syndromes were due to pathological obliteration or interruption of the vascular capillary pattern upon which the nervous synaptic pattern depended for normal function. Dr. Pickworth elaborated his description of the use of focal ischæmia of the cerebral synapses as a common denominator of mental and medical science by reference to mental phenomena, stupor, emotions, and mental deficiency. The main point made was that psychiatric cases should be treated as suffering from a vascular rather than from a nervous pathology.

Friday morning was devoted to a discussion on the

Symptomatology of Vascular Diseases in the Psychoses and Mental Deficiency

Dr. E. KRAPF dealt with the circulatory factor in the pathogenesis of mental disorder. He said that a deeper insight had now been obtained into the

significance of the circulatory factor in mental disorder, and many psychological disorders seemed to be subject to powerful influence from that factor. He raised the question whether a common pathogenesis might lead to clinical resemblance, and showed that circulatory troubles tended to cause episodic disturbances with the symptomatology of petit mal, twilight and depressive states. Hypertension troubles showed a tendency to make their appearance in such attacks; they had short twilight states and states of deep depression, and all the symptoms might occur in the same hypertensive person.

Dr. E. GUTTMANN talked of the psychological implications of functional, vascular, and cardiac disturbances. He said that functional disturbances of the circulatory system and psychopathological symptoms often occurred synchronously, either by coincidence or by some causal relationship. He outlined the various possibilities of interdependence, using as an instance the mental disorder associated with Raynaud's syndrome and migraine. Dr. Guttmann discussed the anxiety associated with angina pectoris, remarking that the late Sir James Mackenzie did not regard anxiety as the cardinal symptom in angina, but pain; Mackenzie recognised, however, that a number of patients had sudden feelings of impending dissolution, without pain, and these he attributed to abnormal rhythm, such as flutter. Probably the cause was the oxygen need of the tissues. Dr. Guttmann used the results seen in functional disorders in an attempt to interpret functional mental disorder in terms of its underlying pathophysiology; but he stressed the limitations of the method and the need for further research.

Dr. MAYER-GROSS spoke on psychoses associated with hypertension, arterio-sclerosis, and heart failure. It was only possible to understand the variability of the clinical pictures in such cases by taking into account the various ways in which the cerebral circulation and its disturbances could interfere with brain function. In patients who showed symptoms of general vascular impairment one noted also constitutional peculiarities, and latent character features coloured the clinical picture so long as there was no more than a slight disturbance. As the involutional phase of life showed a special preference for melancholic and paranoid reactions, these often determined what was seen in the severer psychoses, and obscured their origin. A further factor which impeded diagnosis was the frequent coincidence of pre-senile and senile parenchymatous changes in the brain. Dr. Mayer-Gross discussed involutional changes of personality in regard to their relation to arterial disease. If the typical organic symptoms, such as impaired consciousness, delirium, Korsakow's syndrome, and dementia, were caused by vascular disturbances, this fact might help to solve the problem of how far they could be regarded as focal symptoms—as opposed to general ones—and related to focal lesions.

During the meeting the bronze medal of the association was awarded to Dr. Edward S. Stern, and the divisional prizes to Dr. E. H. Kitching and Dr. J. S. Horsley.

WALSALL GENERAL HOSPITAL.—A pay-bed ward will be added to this hospital before the end of the year. It will cost £8000 and will accommodate 16 persons. Later it is hoped to proceed with the extension of the X ray department.

OXFORD OPHTHALMOLOGICAL CONGRESS

THE twenty-sixth annual meeting of the Oxford Ophthalmological Congress was held at Keble College from July 8th to 10th.

Myopia

With Mr. C. G. RUSS WOOD, the master, in the chair, a discussion on the problem of myopia was opened by Mr. N. Bishop Harman and Mr. Arnold Sorsby, the two speakers presenting diametrically opposite views.

Mr. BISHOP HARMAN held that myopia was a disability, often a grave one. The myopic eye was not so resistant to fatigue or disease as the normal eye. From a statistical analysis of the increasing incidence of myopia with increase of age during childhood, he stressed the fact that myopia was a disease of childhood. The work of Cohn had shown that the school must be held largely responsible for the production of myopia, but this view has repeatedly been challenged and recently Amy Barrington and Karl Pearson have summed up to the effect that the charge against the school had yet to be finally established. The speaker could see no support for the theory that heredity is an important factor in the genesis of myopia. In a series that he had followed up myopia was present in neither of the parents in 67 per cent., whilst the sex distribution, with its incidence of 8 per cent. on girls and 5 per cent. on boys, also pointed towards environmental factors. He held that astigmatism is itself a potent factor in producing increase of refraction, and amongst other factors of significance illness must not be overlooked. In an investigation in special schools he found that the incidence of myopia amongst 959 deaf children was 6·3 per cent., amongst 217 crippled children 12·3 per cent., whilst amongst 128 children with amoral disturbance the incidence was only 1·5 per cent. Further evidence for the environmental significance in the production of myopia was brought out by the fact that whilst an ordinary London County Council school will give 26 per cent. of visual defectives, schools attended by alien children in crowded areas showed 36 per cent., and schools attended by native children in crowded areas 30 per cent. Similar discrepancies in the incidence of myopia and visual defect was shown by an analysis of defects in patients attending different types of hospitals. Thus in a hospital in a poor neighbourhood 23 per cent. of patients showed myopia, whilst in a better-class district only 15 per cent. As confirmatory evidence of the significance of environmental factors in the production of myopia, Mr. Harman quoted the declining rate of myopia during the past fifty years in Sweden, where records have been kept and where an extensive system of school hygiene had been in operation. He regarded myopia as more than a disability. In his own statistics he found that with myopes of 3–5D there was ultimately a break-down in 33 per cent. of patients; this rose to 66 per cent. in myopes 5–10D, and to 77 per cent. in myopes over 10D. In the blind schools no less than 3·6 per cent. of children are recruited from myopes, and amongst the adult blind myopia accounts for up to 14 per cent. His own statistics further supported him in his view that it was close work which was responsible for the break-down of the adult myope; 53 per cent. of those who showed disabilities were engaged in close work. Mr. Harman

related that the myope school arose not so much to satisfy a theory of myopia, as from his experience in 1905 when he found that 6 per cent. of the children in blind schools were myopes who were unable to benefit from teaching in ordinary schools, but were none the less completely out of place in the blind school. The immediate justification of the myope school was that the myopes needed special care. He thought that those who believed in the predominant influence of heredity were driven to assume a fatalistic attitude on a subject on which a good deal of practical help can be given.

Mr. ARNOLD SORSBY said that Mr. Harman had advanced a conclusive argument in favour of the significance of heredity in myopia. The fact that Mr. Harman had found a family history in 33 per cent. of his cases fitted in well with the view that myopia was frequently of a recessive character. Viewed from that aspect, the positive findings as regards the family history in 33 per cent. of cases were more significant than the negative findings in 67 per cent. of cases. His own approach to the subject consisted of a criticism of the theoretical basis of the orthodox attitude. During the middle of last century, he said, it became an accepted dogma that the physical basis of myopia was an undue axial length. That view was never supported by any extensive evidence, particularly in the case of low myopia and medium myopia. In fact the evidence rather pointed in the opposite direction, for there is much to show that at any rate in the lower degrees of myopia the axial length fell within the range of the normal. The suggestion that the myopic eye was an elongated eye fitted in well with the outlook of the nineteenth century, which saw everything in terms of mechanics; the problem of myopia to them became a problem in mechanics: as to what mechanical factors would produce axial elongation. It was thus that over-correction and under-correction of myopia, the use of atropine and of eserine, the stimulation and the paralysis of accommodation, tenotomy of the internal rectus and of the oblique muscles, all had their vogue. School hygiene developed largely as the result of the emphasis on the mechanical factors in the production of myopia, so that some good, though incidental, results were also to be registered from this approach. Still it remained a fact that there was no evidence that myopia had decreased in incidence as a result of the elaborate measures of school hygiene. The often-quoted example of Sweden did not stand detailed analysis, for Swedish ophthalmologists are not in agreement either on the facts of the case or on their interpretation. The mechanical view of myopia failed to explain a series of well-established clinical facts, such as the greater incidence of myopia in certain families, social groups, and races; the unequal development of the two eyes in anisometropia; the different course of hypermetropia in two children under the same environmental conditions, one ending in myopia and the other not; the incidence of complications of myopia late in life, long after the progressive activity of myopia had ceased; and not least the familial incidence of the complications of myopia, often having no bearing to the degree of myopia. The qualifying conception of congenital predisposition that had been advanced to cover the mechanistic conception of the nineteenth century, really shifted the emphasis on to the nature and significance of that congenital predisposition, and this became the essence of the problem. Mr. Harman had spoken of myopia as a disease. This was surely too narrow a conception to cover all myopia. Some myopia had to be regarded as physiological in the sense that any deviation in stature from the ideal mean stature seen in any particular groups was not pathological. The extensive work that had followed this biomathematical approach of Steiger justified the division of myopia into physiological and pathological, whilst the recent work of Tron seriously questioned the validity of the argument that myopia was due to axial elongation. The problem was far more complicated. In the building up of the total refraction of the eye three large variables had to be taken into account, the cornea, the lens, and the axial length, and it was possible to obtain practically the whole gamut of refractive errors by different combinations of these three variables, each of which would still fall within the normal range. The fundus changes in myopia had to find not a mechanical, but a biological explanation. It was not unlikely that these changes might be abiotrophic in character and that they might be linked with myopia rather than be the result of it in the pathological cases. During the process of growth extensive changes in the anterior segment of the eye must occur to compensate for the axial elongation that takes place. This was a problem that had received little attention and for the explanation of myopia it was necessary to know not only the genetic behaviour of the complications of myopia but also that of the different dioptric components of the total refraction. Mr. Sorsby said that whilst he did not minimise the great disabilities of pathological myopia, he felt that it was unfair to apply rigid measures, based on mechanistic theories, to all myopia, most of which was after all biological and of no pathological significance.

In the subsequent discussion the same divergence of opinion was revealed.

Mr. T. HENDERSON (Nottingham) held that myopia was a constitutional disease. Mr. F. A. WILLIAMSON-NOBLE, speaking on the question of heredity, thought that refractive errors and iris colour were linked, a child inheriting the iris colour of one parent is also likely to inherit the refractive state of that parent. Mr. R. BEATSON HIRD (Birmingham) emphasised the age-incidence of the complications of myopia, and as regards treatment of the myopic child he thought that adrenaline drops as advocated by American observers might be useful. Mr. T. HARRISON BUTLER (Birmingham) referred to the hereditary significance of anisometropia; he thought that an increase in the mass incidence of myopia went hand in hand with deterioration of social conditions. Sir ARNOLD LAWSON strongly deprecated the excessive significance attached to the degree of myopia as opposed to the behaviour of the eye.

Four more papers were read on the first day of the congress. Mr. HARRISON BUTLER, in a profusely illustrated account of *lenticonus posterior* and allied anomalies at the posterior pole, discussed the slit-lamp appearances of the rare true lenticonus posterior and of a number of conditions, including industrial cataract, which simulate it. Group Captain W. GUILFOYLE spoke on his personal experiences as a *uniocular pilot of aircraft*, and Wing Commander P. C. LIVINGSTON on debatable ground in the matter of the monocular and uniocular pilot of aircraft. It appeared that the necessity of full binocular vision for piloting was rather over-estimated. Mr. BERNARD CHAVASSE (Liverpool) described the difficulties and uncertainties of the classical Landolt operation for *myotomy of the inferior oblique* and gave details of an open method which he practised.

Hormones and Vitamins in Ophthalmology

On Friday the proceedings were opened with a paper by Sir WALTER LANGDON-BROWN on hormones and vitamins in ophthalmology. Discussing the rôle of vitamin A, he recalled the discovery of its significance for keeping intact the epithelial barrier against infection and its ineffectiveness in checking such an infection once it had broken through the epithelium. The work of Needham had shown the importance of vitamin A for the welfare of the offspring of the pregnant animal, for if a sow is deprived of vitamin A the farrow may develop without an eye cup or lens. Vitamin A had therefore to be regarded as a chemical organiser. The fact that retinal extract, rich in vitamin A, stimulated growth was another indication in the same direction. The deprivation of vitamin B_2 had a striking effect in experiments on rats, as an anterior interstitial keratitis and proliferation of the epithelium and the lens was obtained. It was possible that some forms of retrobulbar neuritis associated with cord lesions might be due to the vitamin-B_2 deficiency, though there was no conclusive evidence as to the rôle of vitamin B_1 in glaucoma just as there was nothing conclusive on the significance of vitamin C in ophthalmology. Vitamin D, on the other hand, was closely associated with hypocalcæmia and the characteristic cataract formation in tetany and other hypocalcæmic conditions. As regards the ductless glands, the pineal body had no direct influence on ocular lesions; it did, however, give indirect pressure effects. The pituitary gland acted in a double manner. Pressure effects were seen in disease and also in pregnancy, this latter to such an extent that in any disease of the optic nerve in pregnancy the pituitary has to be suspected. Sir Walter agreed with the advocacy of surgery rather than X ray therapy in the chromophobe type of pituitary tumour. Chemically the anterior pituitary secretion was responsible for exophthalmos. The experimental work of Marine and Rosen on the production of exophthalmos by injection of methyl cyanide had greatly helped to clear up the mechanism of this symptom, as it has also helped to explain the rather paradoxical increase of exophthalmos occasionally seen after thyroidectomy. The suprarenal gland had been implicated in glaucoma, but the evidence was doubtful, just as the evidence on the significance of the gonads, supported by clinical reports on the value of œstrin in retinitis pigmentosa, must also be regarded as doubtful. There was also a large series of affections in which the rôle of endocrine glands was assumed on incomplete evidence, fragilitas ossium, the Laurence-Moon-Biedl syndrome, arachnodactily, and osteitis deformans being amongst them. As regards the pancreas, recent work by Waite and Beetham questioned the significance of diabetes in ocular lesions. Sir Walter himself was convinced to the contrary from the clinical evidence. Temporary ophthalmoplegia seems to have been seen more frequently before insulin was introduced and was easily controlled. The differential diagnosis of diabetic retinitis still seems to present tangible difficulties and, in his experience, the condition did not respond to insulin therapy. He urged that patients treated with insulin should be warned of the change of refraction that occurred whilst the blood-sugar was being stabilised, and concluded by emphasising the revolutionary changes that have taken place on dietetics in diabetes since the introduction of insulin. A fuller appreciation of such changes, he thought, might help to avoid ocular complications.

Night-blindness

The Doyne memorial lecture on night-blindness in eye disease by the late Dr. DAVID JAMES WOOD (Cape Town) was read by his colleague, Dr. R. C. J. MEYER (Johannesburg). The paper ranged over the chemical, embryological, histological, and pathological aspects of the problem. The work of Verhoef in bringing out "a new membrane of the retina" which apparently did not act in a supporting capacity but for the separation of two systems of nutrition for the rods and cones, one for general nutrition and the other for photo-chemical metabolism, was recalled. It was suggested that the efficiency of the pigment epithelium was responsible for the metabolism of the photosensitive substances and that the health of the epithelium could not fall below a definite limit without endangering the rods and cones. It had been shown that during the process of dark adaptation extensive changes took place in the contents of vitamin A and that visual purple was directly dependant upon vitamin A. Vitamin-A deficiency would therefore cause a failure of visual purple mechanism which would also be disturbed by failure of catalytic agents to initiate and keep up this metabolism. Attention was drawn to the work by Staz, who had shown that retinal adaptation showed considerable variations in different people; it might therefore be concluded that the efficiency of the enzyme responsible for the mechanism of vitamin A —visual purple—was not the same for all people. Discussing retinitis pigmentosa and allied conditions as well as epidemic night-blindness, the argument was advanced that the theory of vascular sclerosis, which in any case was untenable, did not help to explain things, and that the abotrophy theory was itself in search for a cause. This, it was argued, was to be found in an inborn defect of the enzyme, which probably produces the pigments in embryonic life and was responsible for the formation of visual purple postnatally. Failure of the enzyme would explain the failure of the production of visual purple and a perversion of it the production of pigment in retinitis pigmentosa.

Other papers read at the congress included contributions by Prof. JOSEPH IMRE (Budapest) on *plastic surgery of the eyelids*; by Dr. JOSEPH DALLOS (Budapest) on the individual fitting of *contact glasses*, stressing the importance of a large shell and one that fitted the globe perfectly; by Mr. TUDOR THOMAS (Cardiff) on the technique of *corneal transplantation*, pointing out that the discontinuance of the use of oil for the reception of the graft and a new technique of suturing so that, when the stitches were tied, the knot did not lie on the graft. Dr. BERNARD SAMUELS (New York) spoke on the *histopathology of papillœdema*; Mr. E. F. KING on the classification of the *ocular melanomata*; and Dr. D. V. GIRI (Eastbourne) on a *new method of advancement* with a single one-armed suture. A highly appreciated paper came from Dr. A. J. BEDDELL (Albany, N.Y.), who showed a series of fundus photographs in natural colours, taken by a technique he had elaborated.

MANCHESTER ROYAL INFIRMARY.—It is expected that the private patients' home at this hospital will be opened before the end of the summer. The home will contain 100 beds; a number will be available at four guineas a week and more than half at not more than six guineas a week. The home has cost £95,000.

REVIEWS AND NOTICES OF BOOKS

Psychiatry for Practitioners

By Various Authors. Edited by HENRY A. CHRISTIAN, M.D., Sc.D. (Hon.), Hersey Professor of the Theory and Practice of Physic, Harvard University; Physician-in-Chief to the Peter Bent Brigham Hospital, Boston, Mass. London: Humphrey Milford, Oxford University Press. Pp. 646. 30*s*.

AMERICAN psychiatry has been on the whole characterised by an emphasis on therapeutic opportunity and dynamic psychological aspects of causation: this, temperately stated, is a striking feature of the articles included in this work. Of the eleven contributors, five are connected with the University of Pennsylvania; the other authors in the U.S.A. are Prof. C. O. Cheney of New York, Prof. F. G. Ebaugh of Colorado, Prof. Eugen Kahn of Yale, and the late Prof. William A. White of Washington. There are two contributors from Great Britain, Prof. D. K. Henderson and Dr. T. A. Ross.

The long opening chapter by Prof. E. A. Strecker and Dr. H. A. Palmer deals with the recognition and management of the beginning of mental disease. It is sensibly written, but might well have been curtailed by the editor, since it contains much that has been repeated in other chapters of the volume: as it stands, it is almost an epitome of psychiatry. In general, the book has not been strictly edited, and it is needlessly swollen by case-histories—the bane of psychiatric manuals. The psychiatry of childhood is described by Dr. G. H. J. Pearson, without reference to somatic factors in behaviour disorder, but with full consideration of the psychological aspects. A brief and useful chapter on post-encephalitic and post-traumatic behaviour disorders by Prof. Earl Bond, a concise account of mental deficiency by Dr. E. A. Whitney, and of psychopathic personalities by Prof. Kahn are followed by a description of toxic and organic reaction types by Prof. Ebaugh; this is written simply and to the point. Prof. White's account of paranoia and paranoid conditions stresses the psycho-analytic view of the pathology of the illness.

The dementia præcox (schizophrenia) group has been entrusted to Prof. Cheney, who treats it competently along conventional lines. The chapter on affective reaction types by Prof. Henderson is refreshingly plain-spoken and reflects a more individual (though still orthodox) point of view than do most of the other chapters: of Dr. Ross's section the same might be said. Prof. Henderson gives critical attention to recent work dealing with his topic, but his text is notably burdened with case reports. Dr. Ross recapitulates in the chapter on psychoneuroses his views about their nature and treatment, giving them a clear and attractive presentation. He allots much more space to anxiety reactions than to hysterical and obsessional ones, and says little about personality or constitution.

Since this work has not been written for psychiatrists but for general practitioners, it is right that it should contain little theory or argument, and much plain clinical description and advice. Though some of the authors, for example Dr. Pearson, have not succeeded in keeping clear of debatable and rather unpractical explanations, most of them write a straightforward, acceptable account of their subject, generally coloured by optimism.

The 1936 Year Book of General Medicine

Edited by GEORGE F. DICK, M.D. (Infectious Diseases); LAWRASON BROWN, M.D. (Diseases of the Chest); GEORGE R. MINOT, M.D., D.S., F.R.C.P. (Hon.) Edin., and WILLIAM B. CASTLE, M.D., A.M., M.D. (Hon.) Utrecht (Diseases of the Blood and Blood-Forming Organs, and of the Kidney); WILLIAM D. STROUD, M.D. (Diseases of the Heart and Blood Vessels); and GEORGE B. EUSTERMAN, M.D. (Diseases of the Digestive Organs and of Metabolism). Chicago: The Year Book Publishers. 1937. Pp. 848. 12*s*. 6*d*.

The 1936 Year Book of General Therapeutics

Edited by BERNARD FANTUS, M.S., M.D., Professor of Materia Medica, University of Illinois; and SAMUEL J. NICHAMIN, A.B., M.D., Assistant Attending Physician, Cook County Hospital. Same publishers. 1937. Pp. 460. 10*s*. 6*d*.

THE Year Book of General Medicine continues under the same distinguished editors. It is rather full and detailed for the needs of most general practitioners, but to physicians, general or specialised, it is of very great value. In the sea of the year's literature its net is thrown wide, but not all that is caught is kept; papers are wisely chosen, for their interest or their usefulness, and are not merely boiled-down but are served up as well-prepared résumés, written with understanding and garnished here and there with authoritative comment. It is good and concentrated fare and should be widely appreciated.

The same is true in large measure of the Year Book of Therapeutics, though in this subject it is especially difficult to distinguish at their first appearance the good discoveries from the bad. Prof. Fantus notes, with a satisfaction which we share, that in modern therapeutic literature carefully controlled statistics now largely take the place of the "impressionism" of the old school. He finds no single outstanding achievement in the year under review, but an amazing number of new methods and especially of modifications and improvements of old methods, which seem to be of real value. It is certainly true that the doctor of to-day can do a good deal more than he could ten years ago to modify the course of disease for the advantage of the patient, provided he has taken the trouble to find out how. The Year Book is one very good means to that end.

Les lésions organiques du cœur

By R. LUTEMBACHER. Paris: Masson et Cie. 1937. In two vols. Pp. 351. Fr.330.

THE medical knowledge of to-day has been founded essentially on clinical studies supported by necropsy findings, and these methods of observation constitute the basis for the generalisations to be found in modern text-books. Dr. Lutembacher appreciates the importance of this traditional approach to medical problems but he has broken away from the standard method of presentation. Here are gathered together examples of every important variety of heart disease: by this process of integration he has produced in fact an atlas of heart disease in which case records are reported and accompanied by photographs of the morbid conditions found in the heart. Perhaps realising that no photograph, however good, compares with a drawing or painting for illustrative purposes

he has provided representations in natural size; and the photographs also supplied are excellent. Each report is given in its relation to a broad classification of cardiac pathology; thus in the first volume acute endocarditis is subdivided into simple (plastic) and malignant forms, the latter being grouped as primary and secondary and including the various forms of intracardiac thrombosis, endocarditis lenta, and such related states as infarctions of spleen and cerebral embolism. Thirty-four case reports and photographs relate to acute endocarditis alone. The second volume includes sections on myocarditis, the effects of coronary artery disease, congenital heart disease, aortitis, and aneurysms. The author affirms his belief in alcohol and lead as agents of myocarditis and even seems to include obesity and diabetes in this category. Orthodox opinion in this country would probably allow to these factors no further adverse effect on the heart muscle than they could produce through damage to the coronary tree. The example of "myocardite éthylique" given in "observation 79" suggests in the description no condition in the heart that might not be attributable to the hypertension and obesity together, apart from alcohol.

A work of this kind is instructive, possibly chiefly to the author. Such a compilation must clarify his ideas, but the work as a whole is not very readable. It is, however, valuable for reference and interesting to those making a study of special diseases. Obviously no pains have been spared in the preparation of the material, either text or photographs, and the production is noteworthy.

The Metabolism of Living Tissues

By ERIC HOLMES, M.A., M.D., Fellow and Tutor of Downing College and University Lecturer in Biochemistry, Cambridge. London: Cambridge University Press. 1937. Pp. 235. 7*s*. 6*d*.

An Introduction to Comparative Biochemistry

By ERNEST BALDWIN, B.A., Ph.D., Fellow of St. John's College, Cambridge; University Demonstrator in Biochemistry. Cambridge: At the University Press. 1937. Pp. 112. 5*s*.

THE fact that biochemistry is now taken in Part I of the natural sciences tripos at Cambridge has apparently stimulated members of the Cambridge school of biochemistry to write books on their own special subjects which will appeal to many who are not concerned with the teaching of undergraduates.

The aim of Dr. Holmes's book is—to quote from Sir Gowland Hopkins's foreword—"to provide an adequate survey of all that is most significant in our present knowledge of the dynamic side of biochemistry." After a brief consideration of enzymes and oxidation processes, he deals with the metabolic activity of the various tissues in turn—liver, kidney, muscle, and the nervous system. This original treatment results in the formulation of many valuable generalisations which probably have not been made before. A book which deals with tissue metabolism in this way has long been wanted. It is strange to find it in the form of a students' text-book. Chapters on the influence of salts, hormones, and vitamins on metabolism conclude the book, which is written throughout in a readable and sometimes rather conversational style. The author's frequent confessions of our ignorance form a pleasant contrast to those schemes of paper chemistry which mar so many text-books of to-day.

To those who see biochemistry almost solely in its relationship to mammalian physiology, Dr. Baldwin's book offers a glimpse of a new world. The first few sections deal largely with the way in which the various organisms maintain their osmotic pressure and conserve their water. Then the author considers the metabolism of nitrogen and the distribution of nitrogenous bases, phosphagen, and various pigments and catalysts throughout the animal kingdom. The book deals only with certain selected subjects, but these are ones with good stories, and we must confess to finding them fascinating. The work is enlivened by a pleasant wit.

Life and Convictions of William Sydney Thayer, Physician

By EDITH GITTINGS REID. London: Humphrey Milford, Oxford University Press. Pp. 243. 10*s*. 6*d*.

W. S. Thayer obtained his medical degree in 1889. He then went abroad for a year spending most of his time in Berlin and Vienna and studying pathology under Virchow. For a brief period he was in France, long enough to find that "her savants, the methods of her clinics, the quality of her literature all suited him." After his return to America he hesitated as to his next step. Ultimately he decided to start in practice in Boston in a small room, which he used for consultations, sleeping, and study. It is of interest to speculate how this experiment would have turned out had not Fate, after only a few weeks, summoned him to Baltimore. He became assistant to William Osler at the Johns Hopkins, and his allegiance to his chief and to the institution proved determining factors in the life of a physician who was also a fine poet and an expert linguist.

In his writings he aimed always at perfection. "I have a passion to use the perfect word," he declared, "the inevitably right sentence." Dr. Welch said of him that his capacity for taking pains was limitless, adding: "one may take pains and make little headway. Thayer's labours always led to greater and greater light in obscure places. Often his insistence on details was thought by the ignorant to be fussiness, but it was his sense of the value of the smallest clue that enabled him to give a perfect clinical presentation." He has been called "The Physician's Physician," and his career provides an example of the development of a great clinician after an apprenticeship in pathology.

The title of this book is perhaps misleading. It is more of a sketch than a life, and leaves one with the feeling that an adequate biography of this lovable, humorous, and invincibly truthful physician has yet to be written.

A Dictionary of Medico-Legal Terms

By ALBERT CREW, Barrister-at-Law, and K. AYLWIN GIBSON, M.R.C.S., L.R.C.P. London: Sir Isaac Pitman and Sons. 1937. Pp. 80. 5*s*.

THE title-page of this dictionary declares it to have been compiled for criminal lawyers and police officers. The preface announces that it is also intended for jurors and medical witnesses. The juryman may repudiate the duty of special study, and the doctor may feel reasonably confident that he is already familiar with most of what the book offers him. To those, however, who have need of instruction in medico-legal terms from "Abdomen" to "Zygoma," this handy little dictionary may be recommended.

THE LANCET

LONDON: SATURDAY, JULY 17, 1937

THE MILK PROBLEM

THERE are really three problems. The first is to persuade people that milk is good for them. The second is to make it cheap enough for them to buy. The third is to ensure its safety. We are here concerned with the third—and it is perhaps the simplest. For in the whole range of preventive medicine there is probably no other problem which has been so fully investigated, in which the need for action is so obvious, in which the remedy is so easy. At the Royal Society of Medicine a few months ago [1] Dr. W. G. SAVAGE said that 1700–2000 deaths, mostly in children, are caused annually in England and Wales by bovine tubercle bacilli conveyed in milk or milk products. These figures are not guess-work, and if the estimate is wrong it is because it is too low. Other diseases transmitted by milk from the cow to man are undulant fever (which Prof. G. S. WILSON reckons at 500 cases a year), streptococcal infections (of which there have been some disastrous outbreaks, including several thousand cases in Hove and Brighton in 1929), and salmonella infections. Besides these there are numerous outbreaks of scarlet fever, diphtheria, and dysentery spread by infected milk; and if any further reminder is required we have the late Dr. VERNON SHAW'S report [2] on enteric fever in Bournemouth, Poole, and Christchurch last year, in which 718 cases and 51 deaths were traceable to raw milk retailed by one distributor. In face of all this none can deny that the amount of human disease caused by infected milk is very substantial, and the facts have repeatedly been brought to the attention of responsible government departments, not only by outside bodies but by committees they themselves have set up. Nevertheless other considerations have always so far prevented effective measures from being enforced—though it is still stated that this country has the best public health service in the world.

What measures would be effective? Tuberculosis, the most important disease spread by milk, can be tackled in one of two ways, the first of which is to obtain milk from tubercle-free cows. But as about 40 per cent. of cows react to the tuberculin test and the others cannot be deemed safe this is far from easy. Considerable efforts by the Ministry of Health and Board of Agriculture have resulted in an inconsiderable proportion of herds being freed from tuberculosis, and though the past year has shown an encouraging advance a great many years must go by before any large proportion of the population get milk from tuberculin-tested herds. To secure safety from the other diseases mentioned—and also from tuberculosis—there is only one thing to do, and that is to heat the milk before use. Boiling alters the taste, and to some extent the composition, but a satisfactory alternative is pasteurisation, which is officially defined as heating the milk to 145°–150° F. and holding it between these figures for half an hour. The effectiveness of such heating has been proved by innumerable experiments, and any who doubt it should read the article by Prof H. D. WRIGHT and his colleagues on p. 151 of our present issue.

Pasteurisation is opposed because it is thought likely to disturb the milk business, and counter the interests of producers. Weighed against disease and death this does not seem convincing, and much play is accordingly made with suggestions that it alters the constitution of milk, which therefore—alone among protein foods—should be taken raw. But millions of people abroad have been taking pasteurised milk for many years without demonstrable detriment, and many other millions are taking it in our own great cities to-day. It is evident that if cow's milk were the *sole* food of human beings it would be better taken raw; but the latest inquiries [3] demonstrate once more that for practical purposes, as part of a mixed diet, pasteurised milk is as good as raw milk. Undoubtedly pasteurisation requires skilled supervision; but the means are available. We emphasise the completeness of the work already done because the latest move of those who oppose pasteurisation is to propose a detailed inquiry into the whole subject. There is no case for such an inquiry. What is needed is not inquiry but action. It may not be administratively possible to pasteurise the whole milk-supply at once, but it is certainly feasible that all the larger urban areas should have the power—and we hope the duty—to see that only safe milk is sold within their borders. Tuberculin-tested milk gives this safety as regards tuberculosis; and pasteurisation, properly conducted, gives safety from all risks. The time has come when no ordinary raw milk should be sold in any of our larger urban areas or distributed on the authority of any education or other local authority. And later the safeguard must be extended to the countryside and smaller towns.

UNDER-WATER EXERCISES

IT has long been known in hydrotherapeutic establishments and elsewhere that patients with stiff joints or partially paralysed muscles can carry out exercises in a bath which they would be quite incapable of executing outside it, and the experiments of CROWDEN [4] at the British Red Cross Society's clinic in 1935 gave striking proofs of this. He found that a man who was exhausted in two minutes by a certain exercise carried out on land could continue the same exercise almost indefinitely in water; in executing a simple arm-bending or leg-bending exercise the increase in oxygen requirement over the resting level was

[1] *Proc. R. Soc. Med.* June, 1937, p. 25.
[2] *Rep. publ. Hlth med. Subj., Lond.* No. 81, 1937.
[3] See *Lancet*, June 12th, 1937, p. 1417.
[4] Crowden, G. P., *J. Physiol.* 1935, **84**, 31.

about twice as great in air as in water, and with a trunk exercise the proportion was about three to one. The explanation of this is, of course, that the buoyancy of the water supports a large proportion (some 19/20ths) of the body-weight, and although the moving limbs encounter greater resistance the work done against gravity is almost abolished. It follows that if only a small fraction of its power remains in a paralysed muscle, this may still suffice to produce perceptible movement in a limb which is immersed in water. The warmth of a bath, too, may do much to allow of movement in a spastic limb by reducing spasm and the resulting pain. To a certain extent exercises can be carried out in an ordinary bath, but they must of necessity be limited to the limbs, and where the trunk and neck are to be exercised the use of a swimming-bath is essential. The latter has the advantage that it permits of several patients being supervised simultaneously by one attendant, but far more important is its effect on the patient's mind. What a paralysed person wants above all is to be able to move about without assistance, and this he may very well be able to do in a swimming-bath, even though he may need help if he is to take a step outside it. The enthusiastic coöperation of the patient which this ensures contributes largely to the success of the treatment, especially where return of function is a matter of re-education.

Under-water exercises have been much used for some years at Warm Springs in Georgia, and this model institution can count among its successes the partial recovery of FRANKLIN D. ROOSEVELT from the effects of anterior poliomyelitis which had previously crippled him. In England the hot and buoyant waters of Droitwich are famous for their power to restore movement to painful joints and strength to wasted muscles; and our own PREMIER has remarked that it is well worth while to get an attack of rheumatism or lumbago to experience the comfort of a bathe in them. At other British spas, notably at Bath, the "hot pool," which is large enough to permit of free movement, is in constant use; where necessary the patient is lowered into the pool by means of a sling. But much is also possible without the natural advantages of a spa, and in the last two years clinics for this form of therapy have been opened at the Rudolf Virchow Hospital in Berlin and at the Lainz Hospital in Vienna. SCHOLTZ [5] in Berlin reports that he has treated some fifty patients with results that he describes as striking, including cases of spastic and flaccid paralysis from disseminated sclerosis, vertebral lesions, poliomyelitis, and polyneuritis. In tabetics he did not find the method so useful. URBAN [6] in Vienna has treated a further series of cases of similar type, also with satisfaction, though he advises particular care in cases of disseminated sclerosis and progressive muscular atrophy, and those in which the patient's general condition makes exertion dangerous. Incidentally he remarks that a considerable strain, both mental and physical, is placed upon the attendants. He has also done some interesting research in the bath into what he calls the "swimming phenomenon," based on the observation of LUCIANI [7] in 1893 that dogs rendered ataxic by cerebellar avulsion could swim even though they could not walk. He found that four patients with advanced cerebellar ataxia due to disseminated sclerosis, who could neither walk nor stand on land, could swim with astonishing efficiency, and that their ataxia was scarcely noticeable in water; whereas patients with ataxia from extracerebellar causes could not swim, even though their walking was improved by immersion. Another interesting finding was that some deaf-and-dumb patients with completely insensitive labyrinths could swim quite normally, contrary to what is generally believed.

At the Berlin clinic the swimming-bath is some 16 feet long by 13 feet broad, the one at Vienna being slightly smaller. It contains a couch for massage and resting, and there is a rail over the bath to which a patient can hold when doing walking exercises. Sessions last for from a half to one hour daily, and the masseuse stands in the water the whole time during treatment, since some patients need a certain amount of assistance, at any rate in the early days. Non-swimmers wear an inflated rubber ring around their necks. Beyond the initial outlay the treatment is said on the whole to be inexpensive, the main expense of the bath being the cost of refilling it on alternate days. The installation of a continuous purification system would at least reduce the number of refills required. It seems clear that such a bath is a valuable asset to any physical therapy department dealing with neuromuscular disorders. Apart from its therapeutic possibilities, it offers scope for inquiry into problems of equilibrium.

HOSPITALS TO LAST

AN exchange of letters between Sir CRISP ENGLISH and the Incorporated Association of Architects and Surveyors reopens the problem of hospital construction. Sir CRISP would be satisfied to rebuild St. George's Hospital with material that would last (say) 50 years. The secretary of the Association submits that sound buildings ought to last much longer than that. This is an old problem in a new setting. The arrangement of hospitals gets quickly out of date, and the solidity of their structure and the heavy capital cost stand in the way of replacing what may long have been obsolete. For this reason it has often been suggested that hospitals should be built in temporary or semi-permanent style. Even medical administrators, however, admit the difficulty of heating and cooling, and the recurrence of minor nuisances such as breaches in the walls and floors and leakage of roofs, when the building is temporary. Architects tell us that there is little saving when the cost of maintenance of the temporary fabric is added to the annual service of the loan; the figures over a long series of years would be interesting, but our

[5] Scholtz, H. G., *Dtsch. med. Wschr.* 1936, **62**, 417.
[6] Urban, H., *Wien. klin. Wschr.* June 4th, 1937, p. 868.
[7] Luciani, L., Das Kleinhirn, Leipzig, 1893.

type of hospital organisation does not lend itself to the collection of such information. Semi-permanent buildings of light brick or other solid material are not much cheaper in the end, for a large proportion of the cost is incurred on foundations, engineering equipment, and other provision on which economy cannot properly be exercised. Moreover, the building is not internally sound-proof. This type of structure appears to be practicable only for low buildings, with the attendant inconvenience of widespread units.

From the financial point of view it is seldom realised that, whether the original construction is permanent or less permanent, its cost is only the beginning of capital expenditure. Actual figures are not easy to obtain in this country, but some facts are given for American hospitals by REREM.[1] Between 1923 and 1927 149 hospitals in Pennsylvania increased their total investment by more than 50 per cent., although their bed capacity rose by less than 7 per cent. In New York, between 1912 and 1927, the capital investment of 13 hospitals increased by 115 per cent., against a rise in bed capacity of only 49 per cent. As a hospital ages its cost of reconstruction increases, irrespective of the quality of the initial structure, until a time must come when the original expense is a comparatively small part of the total. While voluntary hospitals rarely borrow for purposes of capital expenditure, local authorities usually do and sanction for obtaining money by loan is given by the Minister of Health, who determines the term of repayment. This usually varies from 25 to 30 years, the latter period covering most of the land and main buildings. Perhaps the relative shortness of the loan-sanction is intended more to limit the ultimate cost (since the sum of the total outgoings on interest and repayment is greater with long-term borrowing) than as a recognition that a hospital's life should not be more than 30 years.

The plan followed at the Birmingham Hospitals Centre is a compromise. Here internal walls which are not essential to the support of the fabric are being built of light and easily removable material, so that while the main building is meant to last for a very long period its internal arrangement can be adjusted to meet changing needs. The idea is sound, but it remains to be seen whether rooms so separated are sufficiently insulated from one another to prevent noise, and to what extent it is possible to allow for unforeseen developments by this means.

LONDON CORONERS' QUALIFICATIONS

OUR legal contemporaries make interesting comments upon the decision of the London County Council (discussed in our columns last week) which insists that in future only barristers or solicitors shall be appointed to metropolitan coronerships. In spite of the opinion of the Bar Council there would probably be general agreement that the best equipped coroner would be a man who possessed high legal and medical qualifications in an equal degree. The system of apprenticeship and practice in the professions of law and medicine prevents the evolution of this ideal type. No man can serve two masters in this fashion. Instead London has had two not inadequate alternatives, the lawyer who has qualified in medicine and the doctor who has qualified in law. There is little to choose between the two. The *Law Times* remarks in this connexion that, in proposing to insist upon legal qualifications exclusively, the L.C.C. ought to stipulate not only for five years' study in the legal profession but also for some period of practical legal experience. It adds the comment that it is not impossible to become and remain a barrister for five years without acquiring the foggiest ideas about the sifting of evidence. This possibility indeed is said to be much more likely than that of becoming a doctor without gaining practical experience which would be useful at an inquest or at any rate serviceable as a foundation on which to base medical knowledge afterwards acquired through actual experience. We cite our contemporary's observations with all due respect.

The *Law Journal* questions the decision of the L.C.C. on grounds both of law and policy. It expresses a doubt whether the council has power to say that no medical man need apply unless he is also a barrister or solicitor. If the country is to have fresh legislation on coroners, the new laws are likely to have the effect of confining inquests to decisions on the cause of death, to the exclusion of verdicts which apportion blame or pronounce upon civil liabilities. If this forecast be correct, observes the *Law Journal*, there are strong reasons for having in the coroner's chair men of medical knowledge. The careless doctor or surgeon, or the wilful murderer who goes coolly to the inquest, may escape the vigilance of a lawyer who knows nothing medical unless he is informed and instructed by medical witnesses; "an experienced doctor would be well able to see through such a witness." These views on the L.C.C.'s decision, coming as they do from a legal quarter, are an important supplement to the recommendations of the Departmental Committee on which the legal element was so eminently represented. The *Law Journal* concludes its remarks with a reference to somebody's suggestion that coroners should be appointed in pairs—one a lawyer and one a doctor. This presumably would require fresh legislation. But if the scope and conditions of inquests are to be revolutionised as the Departmental Committee recommended, fresh legislation will in any case be required. There may be justification for mending or ending the almost immemorial institution of the coroner's inquisition, but let it be done by Parliament after full consideration of pros and cons. A Departmental Committee's suggestions, needless to say, have no legislative effect. The Coroners (Amendment) Act of 1926 laid down the qualifications of a coroner. He might be either a barrister, solicitor, or legally qualified medical practitioner. Has an appointing body any right by executive action to purport to repeal the words "or legally qualified medical practitioner"?

[1] Rorem, C. Rufus: The Public's Investment in Hospitals. University of Chicago Press.

ANNOTATIONS

ABORTION IN NEW ZEALAND

NEW ZEALAND is an extreme example of a tendency that is becoming more and more apparent in all hygienically civilised countries. A high level of general health, as shown by a low death-rate and an outstandingly low infant mortality-rate, is coexistent with a high rate of maternal mortality. That part of the maternal mortality-rate which is due to sepsis is made up of a falling rate from septicæmia following childbirth and a rising rate from septicæmia following abortion. In 1930 the graphs of these two rates intersected and in the five-year period 1931–35, 176 women died from sepsis following abortion as compared with 70 who died from sepsis following full-time childbirth. Confronted with these figures, the Government set up a special committee in August, 1936, to inquire into the incidence, causes, and means of prevention of septic abortion in New Zealand. Their report has now been published.[1]

The Committee estimate that 20 per cent. of all pregnancies in New Zealand end in abortion, and of this 20 per cent. less than 7 per cent. are spontaneous. The criminal abortion-rate is, therefore, about 13 per cent. No estimate of the incidence of abortion exists for England and Wales, the recent investigators on maternal mortality having found the task too difficult,[2] but Beckwith Whitehouse stated some years ago that 3000 patients attending a gynæcological clinic in Birmingham showed a total abortion-rate of 21 per cent.[3] which corresponds closely with the New Zealand rate.

Discussing the underlying causes of abortion in New Zealand, the committee recommend in the first place that economic hardship should be dealt with by a direct children's allowance, which can be done by extending the provisions of the present Family Allowances Act. They also suggest the provision of domestic help with financial assistance. Fear of childbirth was not thought to be an important factor. Both in the unmarried and the married "failed contraception" was held to be a frequent cause of abortion, the unreliability of contraceptive methods and the risks of abortion being insufficiently recognised. The sale or distribution of contraceptives should be restricted entirely to registered practising chemists, doctors, hospital departments, or clinics, their sale by other persons being subject to severe penalty, and the committee also recommend that the advertising and sale of drugs euphemistically described as for the "correction of women's ailments" or "correction of irregularities" should be forbidden. Some types of "corrective" pills were analysed and found, of course, to be ineffective and in some cases harmful: the profit on their sale was "at least 900 per cent." A recommendation of more dubious value was to prohibit the sale of surgical instruments which can be used for the purpose of procuring abortions, such as catheters, bougies, and sea-tangle tents except on the prescription of a medical practitioner.

Finally, the committee lay stress on changes in social outlook and suggest an educational campaign against "race suicide." This is dangerous ground. Even if it is fair to describe a falling birth-rate by the catch-phrase "race suicide" it has been shown in many countries that neither propaganda, threats, nor monetary rewards will do more than temporarily arrest the downward trend of a birth-rate. A falling birth-rate, contraception, abortion, and a high maternal mortality-rate appear to be among the penalties paid for advancing civilisation. As life becomes increasingly worth living, we become more and more reluctant to let our children live it.

[1] Report of the Committee of Inquiry into the various aspects of the problem of abortion in New Zealand. G. H. Loney, Govt. Printer, Wellington. 1937.
[2] Ministry of Health. Report on an investigation into Maternal Mortality. Pp. 196 and 221. London. 1937.
[3] *Proc. R. Soc. Med.* 1930, **23**, 241.

SULPHANILAMIDE IN URINARY INFECTIONS

THE possible usefulness of sulphanilamide in other than hæmolytic streptococcal infections is being investigated in two ways, by laboratory experiment and by clinical trial. Experiment has shown that other species of bacteria are susceptible to its action, and these include *Bact. typhosum*; it is therefore in accordance with expectation that at least some bacteria of the intestinal group should be vulnerable in clinical practice. Doubtless because the original Prontosil was obviously excreted in the urine, attempts to treat urinary infections with it were made, especially in Germany, before anything was known of its action, under experimental conditions, on the bacteria concerned, and these attempts met with success. Now that the mode of action of prontosil is known, and studies of its active derivative, sulphanilamide, have shown that it is excreted, largely in an active and bactericidal form, in the urine, there is every reason for undertaking the serious study of this drug as a urinary antiseptic. Such a study is reported by Dr. Meave Kenny and her colleagues in our present issue. They report uniform success in the treatment of 46 cases of *Bact. coli* infection of the urinary tract, 16 of which were cases of pyelitis of pregnancy, the urine becoming free from pus and bacteria and all symptoms being entirely relieved, usually within three or four days. The only failures have been in infections by organisms other than *Bact. coli*. The advantages of the treatment, apart from its rapid and uniform effect, are the relative cheapness of the drug and the absence of the nausea and digestive disturbance often caused by mandelic acid and ammonium chloride, especially in pregnant women. It is interesting that, in spite of the regularity of sterilisation of the urinary tract, in-vitro tests by no means always gave corresponding results; the bactericidal power of urine from patients under treatment varied, and the susceptibility to this action of different strains of *Bact. coli* also varied considerably, some being entirely resistant in vitro though in vivo they succumbed to the action of the drug. A similar study has recently been made by Helmholtz [1] with somewhat different results; he found sulphanilamide urine fully bactericidal to each of three strains of *Bact. coli* and *Bact. lactis aerogenes*, but variable in its action on different strains of cocci and *Proteus vulgaris*. This puzzling discrepancy between in-vitro and in-vivo results will fortify the suspicion that the action of sulphanilamide in the body may not after all be directly bactericidal and nothing else.

In Germany the original prontosil is still being used a good deal, and the rapid advances for which French and English workers have been responsible seem not to be generally known. Weiser [2] reports treating a series of cases of urinary infection with

[1] Helmholtz, H. F., *Proc. Mayo Clin.* 1937, **12**, 244.
[2] Weiser, A., *Med. Klin.* May 14th, 1937, p. 674.

prontosil with apparently uniform success, and these were mainly of quite a different nature from the cases treated by Dr. Kenny. They were chiefly chronic infections, some in elderly subjects with prostatic obstruction or a history of calculus, and most of the infections were mixed or coccal. The evidence furnished by this paper is not conclusive, but it does suggest that some urinary tract bacteria other than *Bact. coli* may be exterminable by these drugs.

CANCER IN THE GREAT CITIES OF THE WORLD

IN the hope that statistical inquiries into the mortality from cancer might be clarified by a world-wide survey of its incidence, the International Statistical Institute, at its meeting in Mexico in 1933, appointed a committee to make such a survey. The task was entrusted to Dr. Wilhelm Böhmert, who has now issued his report.[1] In view of the greater inaccuracies in the mortality records of sparsely populated areas, he has confined his attention to the large cities of the world. For such he has obtained and tabulated recent population figures by age and sex, and the corresponding number of deaths attributed to cancer in general and in different sites. Thirty-three countries in all parts of the world are represented and the cities included contain a population of more than 140 millions. A very large amount of material is thus presented in a convenient form. Having paid attention to the various sources of error that may complicate interpretation of these figures, Böhmert calculates the death-rates from cancer experienced in different cities at ages over 40 and in the age-group 40–60. In total there is no very pronounced difference in any part of the world between the male and female mortality-rates. Division by ages show fairly generally higher rates amongst females up to about ages 50–60 and higher rates amongst males after age 60. The total death-rates from cancer at ages 40 and over vary between, roughly, 65 per 10,000 in New Zealand, 40 in the Netherlands, a little below 40 in Great Britain, 30 in Japan, and less than 10 in Egypt and India. Such differences, apart from other errors, may clearly be due in part to differences in the age-constitutions of the populations concerned, for over 40 years of age is a very wide group where cancer is concerned. Division by site—taking the number of deaths attributed to each site as a percentage of the total cancer deaths—also reveals very wide differences. For instance, the proportion of deaths attributed to cancer of the digestive organs is highest in Japan, largely a vegetarian country, and relatively low in the meat-eating Anglo-Saxon populations in different parts of the world. On the other hand, cancer of the breast is comparatively common among the English-speaking populations and rare in Japan, where cancer of the uterus appears to be considerably more important. The progression of the relative importance of each site with age does not vary materially in different parts of the world.

Böhmert also inquired how far information was collected in different countries regarding the social and other characteristics of persons suffering from cancer. Only in one or two countries had this type of investigation been undertaken, and he concludes that it would be advantageous to extend it. He would like to see a questionnaire completed for each cancer patient, giving the incidence of cancer on the immediate relatives, the occupation of the patient, his social status, and other particulars. The accumulated material thus obtained would be analysed officially on comparable lines in each country.

[1] Untersuchung über die Todesfälle an Krebs in den grossen Städten der Welt. By W. Böhmert. International Statistical Institute, 2 Oostduinlaan, The Hague, Holland. 1937. Pp. 71. 1.50 florins.

TUBERCLE BACILLI IN STOMACH WASHINGS

ESTIMATES of the comparative importance of the clinician, the bacteriologist, and the radiologist in the detection of early pulmonary tuberculosis are apt to vary widely, if not wildly. Although the clinician keeps coming back into his own, it cannot be denied that he and his stethoscope have lately been pushed a little into the background by the growing prestige of the radiologist. This prestige, however, should suffer a check from investigations conducted at the Öresund Hospital in Denmark by Dr. Ulf Gad,[1] who has made a bacteriological examination of the contents of the stomachs of 271 patients whose radiological reports, as far as their lungs were concerned, had been reassuringly negative. In as many as 34 cases, or 12·5 per cent., irrigation of the stomach on two successive mornings with 300 c.cm. of water yielded a fluid in which tubercle bacilli were found. In 97 of the 271 cases the patients had been admitted to hospital for observation, despite a negative radiological report, because they had signs and symptoms that made them suspect, and in 11 of these cases tubercle bacilli were found in the stomach. Another group consisted of 75 patients who suffered from pleurisy, and tubercle bacilli were found in the stomachs of 12 of these. The only group in which the stomach-pump and radiological tests agreed consisted of 23 patients representing almost as many different diseases which ranged from undulating fever to pulmonary infarct. In none of them could tubercle bacilli be found by gastric lavage, although this group contained cases of erythema nodosum, spontaneous pneumothorax, empyema, and bronchitis. It should be noted that all Dr. Gad's 271 patients were adults, and that hitherto most of the publications on the diagnosis of pulmonary tuberculosis by gastric lavage and bacteriological examination have concerned children, who are more likely to swallow all their sputum. But evidently the usefulness of the stomach-pump test is far from negligible in adults, and we are likely to hear more of it in the future as a corrective to the interpretations set on shadows by the radiologist and on sounds by the clinician.

THE HOSPITAL GUIDE

THE man in the street perhaps knows the names of a dozen London voluntary hospitals. A general practitioner may know the names of 50. Few people can realise that there are 145 voluntary hospitals in London. The Hospital Guide, issued by the Hospital Saving Association,[2] sets out particulars of all these and shows their scope. It should be valuable to every medical man who has to send patients to hospital, for it will probably inform him of facilities for special nursing and treatment of which he had never heard, and it gives hours of attendance. Another list sets out particulars of the hospitals with pay-bed accommodation, which meets the need of patients who do not wish to compete for admission to the ordinary wards and are willing to pay a higher fee for more privacy and perhaps better accommodation. There is also a list of convalescent homes, of spas and seaside resorts, and of district nursing associations. The contributory scheme of the Hospital Saving Association is its chief activity, and the Guide

[1] *Nord. med. Tidskr.* May 22nd, 1937, p. 815.
[2] London: 30, Lancaster-gate, W.2. 3*d*.

sets out in full the means by which any person can join a group or become an individual contributor and pay 3*d*. a week, in return for which he receives a great many benefits. When a contributor is accepted for treatment by one of the hospitals in the scheme, his means are not inquired into and he pays nothing as an in-patient in an ordinary ward or as an out-patient. At other hospitals he is reimbursed, with certain limitations, the normal payments which he has been called on to make, up to a period of ten weeks. Many municipal hospitals will also accept the Association's green voucher for a period not exceeding ten weeks. The fund also gives assistance towards the cost of dental treatment and dentures, convalescent treatment, surgical appliances, glasses, and ambulance service. The Guide gives full information about these and other facilities, including the National Eye Service centres administered by the National Ophthalmic Treatment Board, the Voluntary Hospitals Ophthalmic Clinics Scheme, and the King Edward's Hospital Fund for London. It also contains articles on auxiliary medical services, public medical services, the provision of institutional treatment through contributory and provident schemes, and medical psychology.

FŒTAL MALFORMATIONS

ACCURATE information about the causation of fœtal deformities is still badly needed, and Mr. Percy Malpas's valuable study [1] of them is correspondingly welcome. His material consists of 294 cases of malformation occurring among 13,964 consecutive births in the Liverpool Maternity Hospital during the decade 1923–32. Additional particulars relating to the malformed offspring were obtained by means of a questionnaire sent to the parents asking for information about the age of the father, the existence of parental consanguinity, and the condition of any later children. Only 109 replies, however, were received from the parents of the 294 malformed children, and clearly this sample may not be representative of the total. The total incidence of malformations among these children born in hospital was, it will be noted, 2·1 per cent., or, roughly, 1 in 50 births. Just over half these malformations were cerebro-spinal—58 hydrocephalus, 44 anencephalus, 39 spina bifida, and 8 iniencephalus. In the group labelled general the largest contributors were club-foot, mongolism, hare-lip and cleft palate, hypospadias, and malformed arms or hands. Division of the total births by age of mother enables the incidence of malformations to be assessed at different maternal ages. Anencephalus, hydrocephalus, mongolian idiocy, and possibly congenital cardiac diseases and hare-lip and cleft palate are found to be more frequent at the older maternal ages. The other conditions, including spina bifida, show no clear relationship to the age of the mother. There was no evidence that disparity between the ages of the parents was of any significance. Clearly the greater frequency of certain conditions at older maternal ages may be a function of birth order rather than of the age of the mother. The data do not allow investigation of the place of the affected children in their completed fraternities, and in place of it a cruder method has to be employed—namely, a comparison of the proportions of multiparæ and primiparæ among the total births and among the affected children. Although those conditions that show an increase with maternal age all show some excess of multiparous mothers the differences are relatively small. Malpas concludes that parity does not modify the incidence of malformations other than hypospadias, which is commoner in first-born children. There was, however, a suggestion in the figures that hydrocephalus tends to be commoner in the children of primiparæ and of women who have borne more than some seven children. With anencephalus, hydrocephalus, and spina bifida the clinical histories of the mothers showed higher proportions of abortions, stillbirths, or neonatal deaths than were found in the total population—a result which Malpas takes to be indicative to some extent of poor general maternal physique. The importance of these relationships lies, he thinks, in the evidence they afford of environmental rather than hereditary influences. Before their significance can be established one must consider whether the various types of human malformation represent the different manifestations of a common group of causes or arise from separate and individual causes. After a review of the cases of multiple malformations and recurrent malformations recorded in this sample, and a discussion of the absence of parental consanguinity in those who replied to the questionnaire, Malpas concludes that all human malformations form a closely allied ætiological group. In view of the preponderance of cerebro-spinal malformations over other types, the causes of malformations in general are, he argues, to be sought for in the causes of abnormal nervous growth. The earliest change, he suggests, may be a modification of the nutrition of the embryo; this leads to an abnormal development of the primitive vascular system and thus to an abnormal development of the nervous system. This again results in failure in the orderly integration of the growth of the various parts of the body, an integration depending on the nervous system. Thus the individual malformations of the various organs arise, depending in their distribution on the situation of the abnormality in the nervous system.

[1] *J. Obstet. Gynæc.* June, 1937, p. 434.

RATIONAL ENDOCRINOLOGY

OF all branches of medicine none in the past few years has attracted more interest or inspired more writing than endocrinology. The result is that while the lay public is inclined to demand endocrine therapy, and manufacturers have been quick to respond, it is hard for practitioners to assess the value of the innumerable preparations marketed, and impossible for them to keep abreast of what is published. To meet this difficulty the *British Medical Journal* arranged a series of articles by authorities on the various aspects of endocrinology, and these are now republished in book form.[1] The approach is essentially practical, but a sound balance has been maintained between theory and clinical application. The editor of the *British Medical Journal* contributes a preface, setting out briefly the objects of the series, and the present position and history of endocrinology are dealt with by Sir Walter Langdon-Brown and Sir Humphry Rolleston respectively. Six articles are directly concerned with the pituitary, six with the thyroid, three with the adrenals, and two with the parathyroids. Other subjects considered in detail include pregnancy, the menopause, menstrual disorders, male hormones, and the thymus and pineal glands. Altogether, 24 authorities have contributed. The value of a book of this kind hardly requires

[1] The Endocrines in Theory and Practice. Articles republished from the British Medical Journal. London: H. K. Lewis and Co. 1937. Pp. 278. 9*s*.

emphasis, and very many readers of the *British Medical Journal* must have looked forward to acquiring this series of articles in a more permanent form. The reader's most immediate reaction will probably be one of horror when he considers the amount of money wasted by the prescription of endocrine preparations by mouth which are completely inactive thus given. If the only function of the book were to bring this home to the medical profession it would serve a useful purpose; but it also provides definite guidance towards rational endocrine therapy, and gives cause for optimism to the most cynical.

TUBERCULOSIS IN INDIA

THE April number of the *Indian Medical Gazette* is devoted to tuberculosis. In an editorial article it is pointed out that the disease is by no means a recent arrival in India, but one that has claimed victims for many centuries (25 at least, it is believed). To-day, however, it appears to be spreading rapidly and has become a problem of public rather than individual health. The claim is made that the soil on which the tubercle bacillus is implanted in India is entirely different from that anywhere else in the world, though this claim is somewhat modified later on. A set of environmental factors of importance in the West are not necessarily of equal importance in the East, and a public demand for sanatoriums and dispensaries, and all the paraphernalia of Western anti-tuberculosis measures, though well meaning, is not necessarily well advised. The alternatives are not clear, but a plea is made for organised search, both in the field and in the laboratory, for the best methods of combating the disease, and the signed articles in this special number form a useful contribution to the subject. Dr. A. C. Ukil states that tuberculosis is not yet notifiable in the rural areas of India, whilst the registration of deaths is sufficiently defective for many fatal cases of the disease to pass unrecognised. Public health work is therefore beset with difficulties. Nevertheless, the results of sanatorium treatment, recorded in another paper by Dr. Fremodt-Moller, at the Union Mission Sanatorium, show that good results are obtainable with modern methods in India just as in Europe. Other contributions, too, give evidence of alertness in the modern treatment of the disease.

THE TIME-RELATIONS OF CARDIAC ENLARGEMENT

RADIOGRAPHY is useful both to establish the presence of heart disease and to reveal its cause. Studies to this end have been concerned more with statics than dynamics and the changing appearances in the course of cardiac disorders are not well known. Dr. Palmer,[1] however, has now succeeded in collecting data on the progressive changes in the heart's size over long periods in a variety of conditions. According to current belief, enlargement depends chiefly on two factors—first, the work that the heart is called upon to do, and secondly, its capacity for doing it. The capacity to perform work is affected by many different kinds of injury to the myocardium, especially ischæmia and chronic inflammation; but apart from these a hypertrophied myocardium seems to become fatigued and inefficient in a way not well understood. There are probably other factors that contribute to enlargement, and Dr. Palmer suggests that age is one of them; for a given disorder more readily produces enlargement in the young than in the old. Congestive failure is attended by some increase in the heart's size (though the increase is more apparent than real), and this is a consequence largely of changes in the auricles. On the other hand, no evidence is forthcoming in support of "acute dilatation," which still awaits radiological proof. Dr. Palmer, however, draws attention to rapid local increase in the size of the left ventricle, which, if it occurs within a few months and without distinct aggravation of symptoms, means cardiac aneurysm. It is to be noted that an increase in the cardiac shadow is referred to as enlargement simply, and no attempt is made to distinguish between hypertrophy and dilatation. This is in accordance with opinion nowadays held that there is no such thing as acute enlargement and that the magnitude of the two components of enlargement are hard to assess. Though there are considerable local enlargements which are obvious exceptions to this rule, differentiation, when attempted, is usually based more on inference from the history and symptoms than on the physical signs. Dr. Palmer's report throws light on a neglected aspect of cardiology, and at the same time shows where further work should be done.

[1] Palmer, J. H., Development of Cardiac Enlargement in Disease of the Heart: a Radiological Study; *Spec. Rep. Ser. med. Res. Coun.* No. 222. H.M. Stationery Office. Pp. 48. 1*s*.

OBJECTS OF SURGICAL ART

THE museum of the Royal College of Surgeons contains a great many surgical instruments, and of late years the honorary curator of the historical collection has endeavoured to preserve, as a memorial to eminent surgeons, specimens of instruments which they originated and which are known by their names. To the collections thus gathered has now been added a number of the instruments invented and used by the late Lord Moynihan, which have been presented by his son. Another important addition to this section are examples of many interesting patterns of instruments and appliances made by the firm of Down Bros. over a quarter of a century ago. Most of these are now becoming obsolete, for (as the donor points out) very few instruments now remain unchanged for twenty-five years. This large assemblage also serves to show the gradual obsolescence of certain operations and affords material for study by surgeons who are proposing to design new instruments. By the kindness of Dr. R. J. Probyn Williams, the already fine collection illustrating the history of anæsthetic apparatus has been enlarged by a number of pieces dating from 1895 to 1908. The include the original model made for Paterson's nasal gas apparatus and the original model of the ether inhaler devised by the donor.

The history of the head-saw has now been worked out by the honorary curator and the result is shown in a series of these instruments, now mounted, documented, and chronologically arranged in the instrument room. The earliest representation of the head-saw is that figured in a manuscript of the eleventh century by Albucasis. In the fourteenth century there is a drawing of one in the MS. of William of Parma that belonged to John Wryghtson of Oxford, from which a model has been made. In the sixteenth century Andreas Della Croce depicts several with blades of varied shape. After the seventeenth, the head-saw went out of use, until its employment was revived by Cockell about 1783. Cockell devised several instruments with different shaped blades and six of those he originally used are included in the collection. In 1803 the use of the head-saw was again advocated by William Hey,

F.R.S., of Leeds, and in this way it became associated with his name, being still known as Hey's saw.

A unique gift to the historical collection comes from the collection of Mr. C. S. M. Bompas. It is the original cabinet made for the late Frank Buckland, F.R.S., to hold the bones and remains of John Hunter, which he discovered after an arduous search in a vault in the crypt of St. Martin-in-the-Fields in 1859. These remains, as is well known, were afterwards interred in Westminster Abbey.

CHEAP MILK FOR MOTHERS AND CHILDREN

THE Children's Minimum Council are submitting to the Ministry of Health a memorandum on the provision of cheap milk for mothers and pre-school children. In November, 1935, a Government spokesman said he hoped soon to be able "to announce a policy under which the cheap milk scheme for school-children will be extended to expectant mothers and children under five." Since then the need for such a policy has been repeatedly urged. At present prices it is impossible for many working-class families to buy the amount of milk recommended by the Ministry of Health's advisory committee on nutrition; and though about 7 million gallons (including dried milk) are distributed annually through maternity and child welfare centres, this amounts to a pint a day for only about 150,000 persons; whereas, "the number of children under five and of nursing or expectant mothers of the same social status as the elementary school population in England and Wales is estimated at about 3 millions." The Children's Minimum Council propose that milk should be made available at 1½*d.* a pint for all expectant and nursing mothers and children under school age in families where the chief wage-earner is covered by National Health Insurance or is of equivalent economic status; and that the amount should be up to two pints a day for the mother and a pint for the child. How this is to be done is set forth in their memorandum, which is obtainable at 6*d.* from 72, Horseferry-road, London, S.W.1.

TOXIC GASES

DESPITE recurring fatalities in places where sewage gas has accumulated the poisonous nature of sulphuretted hydrogen is not widely recognised. Inhalation of air containing H_2S in the proportion of one part in a thousand will cause rapid unconsciousness, resulting in death unless artificial respiration is applied forthwith. In this concentration hydrogen sulphide is in fact nearly as toxic as hydrogen cyanide, and may paralyse the respiratory centre with equal rapidity. One part in two thousand causes severe irritation of the eyes, and if inhaled for more than 15 minutes may fatally injure the lungs; one in five thousand is equally dangerous if inhaled for an hour, and even one in ten thousand will cause symptoms of conjunctival and respiratory irritation; one in thirty thousand is not harmless over long periods. It is appropriate then that sulphuretted hydrogen should come first in a series of leaflets describing standard methods of detecting toxic gases in industry.[1] The recommended test with lead-acetate paper is sensitive to one part in 150 thousand, a degree of sensitivity not too high in view of what has been set out. Dr. J. S. Owens's recent reminder that the human adult consumes in a day about 2·7 pounds of dry food, 4·5 pounds of water, and 30 pounds of air illustrates what opportunities exist for absorption of impurities in air. A definite procedure is laid down, the air to be tested being drawn through the prepared paper by means of a hand pump, and the stain, if any, produced by one, two, three or five strokes of the piston compared with a set of standard stains. These have been reproduced in colour on a printed slip enclosed in a pocket in the cover and the cost of this slip is responsible for the high price of the leaflet. Sulphuretted hydrogen may be encountered in various industries, especially artificial-silk works, chemical and dyeing works, coke oven and by-product plants, gas works, grease and petroleum refining, tar distillation, and sewage works. A system of testing air at intervals in the London main drainage system has been in use for some years. This leaflet is the first instalment of a series dealing with the toxicity of various atmospheres which men may have to enter. The available literature on the subject is scattered and much of it is contradictory. Each test now given has been standardised in the laboratory of the Chemical Defence Research Department and tested under working conditions with the coöperation and financial aid of the Association of British Chemical Manufacturers. The reckless use of the gas in chemical laboratories has led students to consider it relatively harmless and this leaflet does well to correct the wrong impression generally received.

[1] Department of Scientific and Industrial Research. Methods for the Detection of Toxic Gases in Industry. Leaflet No. 1. Hydrogen Sulphide. H.M. Stationery Office. 3*s.* 6*d.*

THE EDITORSHIP OF "THE LANCET"

THE Proprietors of THE LANCET have appointed Dr. Egbert Morland as editor in succession to the late Sir Squire Sprigge. Dr. T. F. Fox and Dr. M. H. Kettle have been appointed assistant editors.

THE King has approved the grant to the Institute of Hygiene of a supplemental royal charter giving it power to amalgamate with the Royal Institute of Public Health. The amalgamated bodies will be known as the Royal Institute of Public Health and Hygiene. Their manifold activities have hitherto been supplementary though directed to the same end, and the amalgamation will, it is hoped, make for enhanced usefulness in the cause of national health.

THE air-raid precautions department of the Home Office last week issued two memoranda to local authorities. The first, which deals with compensation in the unlikely event of injury to a student attending the Civilian Anti-gas School, mentions that over 1200 have already passed through this school. The second points out that the time has come to expand and elaborate the arrangements for local anti-gas training, which has often been held up because officials who have attended the school are not released from their normal duties in order to hand on the instruction received. "The bottle-neck in anti-gas training is the limited number of qualified instructors." Syllabuses for local courses are given, five being recognised, as follows: full course (about 20 hours), medical course (12 hours), voluntary aid course (10 hours), short course (5 hours), and short decontamination course (2–3 hours). It is suggested that members of the public not undertaking special service should be given a single lecture of an hour, or if desired a course of four or five. The memoranda are to be had from H.M. Stationery Office at 1*d.* and 3*d.*

SPECIAL ARTICLES

THE ADEQUACY OF COMMERCIAL PASTEURISATION FOR DESTRUCTION OF TUBERCLE BACILLI

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ALTHOUGH earlier publications provided contradictory evidence as to the effectiveness of the holder pasteurising process for the complete destruction of tubercle bacilli in milk, the paper of North and Park (1927) made it very clear that exposure to a temperature of 145°–150° F. for thirty minutes affords an ample margin of safety both as regards time and temperature. It is, however, quite evident that if pasteurisation on the commercial scale is to be entirely satisfactory it must be carefully conducted and adequately supervised (Dalrymple-Champneys 1935). Those who will have to decide the question as to whether compulsory pasteurisation is to be adopted will require to satisfy themselves that the risks of bulking can be completely removed by the commercial processes in common use.

While a great amount of testing of individual samples and of the working of individual plants must have been done at one time or another very few reports of such work have found their way into readily available literature. The report of the Department of Health for Scotland on tuberculous infection in milk (Report (1) 1933) records that 35 out of 1243 samples of milk, "heat-treated" by the holder process, contained tubercle bacilli. Most of these could be traced to plants of a particular type or inefficient handling. Traum and Hart (1916) in California record observations upon the commercial pasteurisation of 24 samples of milk from a large herd which was composed of animals segregated because of positive tuberculin reactions. The milk of the herd constantly contained tubercle bacilli when in the raw state but not one of the samples examined after pasteurisation contained enough tubercle bacilli to infect a guinea-pig. Pullinger (1934) took 63 specimens of milk from the inlet pipes of 7 different pasteurising plants and found all of these to contain tubercle bacilli. Samples collected 45 minutes later from the outlet pipes contained none. Beusch (1935) has recently reported that 50 per cent. of the samples of raw milk received at the Leipzig central milk station contain tubercle bacilli but none were found after pasteurisation. No statement of the number of samples is given.

In view of the paucity of published work on the efficiency of commercial pasteurisation we have thought it worth while to place on record experience we have been able to gain during the past two years.

METHOD OF EXAMINATION EMPLOYED

The method of examination we have employed has been to centrifuge 80 c.cm. of milk for 20 minutes at about 3000 revolutions per minute and inoculate half of the deposit, taken up in a small amount of saline, intramuscularly into each of two guinea-pigs. After the third week both animals were examined weekly for enlarged glands in the groin and if these were found one animal was killed and thoroughly examined macroscopically and bacilli sought microscopically. If these were present the other animal was also killed and examined; if not the survivor was watched for a further period. If no "clinical" changes could be detected the animals were kept for eight weeks and then killed and examined. We have found the use of two animals indispensable but are doubtful if it is generally necessary to delay examination beyond six weeks. We have not made use of cultural methods at all.

EXPERIENCE WITH HEAT-TREATED MILK SUPPLIED TO SCHOOL-CHILDREN

In 1934 the Liverpool authorities, on the advice of the medical officer of health, decided that milk supplied to school-children should be heat treated, as required for pasteurisation, in installations approved and inspected by the medical officer of health. The number of approved suppliers of "school milk" was 17 in 1935 and 14 in 1936. Some of them are licensed to sell "pasteurised" milk under the grading scheme but many are not. The milk therefore should be termed "heat treated" and the inspection carried out has been such as to ensure that the heat treatment did in fact consist of exposure to a temperature of 145°–150° F. for 30 minutes.

In 1935 and 1936 we examined altogether 440 samples. In not one instance were we able to demonstrate the presence of living tubercle bacilli. It is evident that the methods employed in the numerous plants concerned were quite adequate for their purpose. That the result was not due to absence of tubercle bacilli in the Liverpool raw milk is shown by the fact that we were able to demonstrate these organisms in 233 out of 2402 ordinary samples taken from the city supply during the same period. We feel fairly certain that the excellent result in this series is very largely due to the strict supervision of the plants by the staff of the medical officer of health who were able to provide against errors of technique before they had become serious (Report (2) 1936).

EXPERIENCE OF THE WORKING OF A PARTICULAR PLANT OVER A PERIOD OF ONE YEAR

At the request of Dr. B. T. J. Glover, senior assistant medical officer of health, and with the kind and willing coöperation of one of the large distributing firms of the city, we have been able to investigate the efficiency of a modern plant over a period of approximately one year. The plant in question is excellently installed in an up-to-date and exceedingly well-conducted establishment. It is a modern example of a well-known vacuum pressure type of apparatus with four separate aluminium holders, each of 130 gallons capacity. The raw milk passes through a heat exchanger and enters the holder at a temperature of 148° F. and the pasteurised milk leaves it at 146°–146·5°. Thermographic records, both on the entry and on the exit lines, of the whole of each day's run have been carefully examined and show that the temperature was always between 145° and 150° F. The thermographs have been frequently checked against standard N.P.L. thermo-

meters. Each holder vessel required 17 minutes to fill and 15 minutes to empty, and the holding-time has been regularly 30 minutes. Filling, emptying, and holding are mechanically controlled and the temperature of input is regulated by a thermostat. We are satisfied that the heat treatment completely satisfied the requirements for pasteurised milk.

On two days in each week specimens were collected in such a way as to provide a fair average sample of the whole of the milk treated during that day. Two dripping devices were inserted, one into the inlet pipe-line prior to heating and the other into the outlet line between the heat-exchanger and the storage tank. Continuous slow dripping from these devices throughout the whole or the greater part of the run thus provided two fair and representative samples, one of raw and one of pasteurised milk, which were received in sterile vessels, stored in the cold overnight, and examined next morning. The volume of each sample was about one quart.

The observations extended from Feb. 11th, 1936, to Feb. 26th, 1937. Altogether 102 samples of raw and a corresponding number of pasteurised milk were examined. The general results were as given in Table I.

TABLE I

—	No. examined.	Tubercle bacilli found.		Tubercle bacilli not found.	
		No.	Per cent.	No.	Per cent.
Raw milk ..	102	61	59·8	41	40·2
Pasteurised milk	102	0	—	102	100

From 59·8 per cent. of the raw samples we were able to obtain tubercle bacilli but not a single sample of pasteurised milk contained enough of these organisms to infect a guinea-pig.

It is generally recognised that the percentage incidence of tubercle bacilli in milk varies directly with the bulk of the sample from which the specimen is obtained. In this series the smallest volume treated on any one day was 639 gallons and the largest 1749. Table II gives a summary of findings in this connexion.

TABLE II

Volume treated.	No.	Tb. +	Tb. −	%Tb. +
Over 1500 gallons ..	11	8	3	72·7
1250–1500 „ ..	9	8	1	88·8
1000–1250 „ ..	21	19	2	90·0
750–1000 „ ..	31	19	12	61·3
Less than 750 gallons ..	30	7	23	23·3
—	102	61	41	59·8

The bulk of milk samples was, however, not the only factor involved. The raw milk was obtained from two different sources and the proportions varied from day to day. We have clear evidence that milk from one of these sources was much more regularly infected with tubercle bacilli than that from the other. It so happens that 18 out of the 30 samples of less than 750 gallons came from this source and all were free of tubercle bacilli.

It seemed just possible that the use of our special sampling device might have led to an exaggeration of the frequency of infection of raw milk and that the organisms might have persisted in the inlet-pipe from previous samples. As the whole apparatus was steam-sterilised this seemed improbable but we have tested the point. On each of 10 days drip samples of the water used to wash out the sterile plant before allowing milk to enter were collected in the usual way. Thereafter the raw milk and pasteurised milk were sampled and all three individually examined for tubercle bacilli by guinea-pig inoculation. None of the 10 samples of wash-water or of pasteurised milk contained them, but 6 of the 10 specimens of raw milk produced tuberculous infection. It is clear that the organisms were in the milk and not imparted to it by the plant. Ordinary bacterial counts and estimations of *B. coli* content showed that the whole plant was to all intents and purposes sterile before use.

DISCUSSION

The results of these two investigations call for little comment. They agree in indicating that, under ordinary commercial conditions properly run and adequately supervised, pasteurisation is a completely effective process. The position as regards tuberculous milk in Liverpool is probably no worse than that in other cities of similar size in this country. Probably not less than 10 per cent. of our ordinary milk samples contain tubercle bacilli and where bulking occurs the incidence is many times greater. Merely to state the existence of such a danger to health is to demand that it shall be removed. Pasteurisation is clearly an effective remedy which needs careful supervision, implying activity on the part of the health authorities, and can be readily checked with the aid of the phosphatase test (Kay and Graham 1933). Surely it is high time that local authorities had the power to remove these dangers if they so desire. It is of course evident that milk may be dangerously contaminated after pasteurisation and complete safety requires proper arrangements for bottling and distribution. These are an almost inevitable appendage to a properly equipped pasteurising plant.

SUMMARY

Of 440 samples of "school milk," heat treated in commercial plants as required for pasteurisation, none contained tubercle bacilli.

All of the 102 samples of pasteurised milk collected from a single plant in the course of a year were free from tubercle bacilli although these organisms were present in 61 of the corresponding raw samples.

We are indebted to Dr. V. Glass and Dr. H. R. Shone for the necessary animal inoculations in this investigation.

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NURSING ASSOCIATIONS.—Princess Beatrice presided on July 8th over the annual meeting of the Overseas Nursing Association. In presenting the report Lord Athlone said that they had now nearly 700 nurses serving overseas. He referred to the excellent openings for nurses under colonial governments.—On July 7th Lord Athlone presided at a meeting of the council of the Queen's Institute of District Nurses when it was stated that the nurses had paid over a million visits during last year. Fifty-eight nursing associations had become affiliated with the institute since last March.

THE TUBERCULOSIS CONFERENCE

THE twenty-third annual conference of the National Association for the Prevention of Tuberculosis was held in Bristol from July 1st to 3rd. Sir ROBERT PHILIP (chairman of council and president of the conference) was unfortunately absent through illness.

PROPAGANDA AGAINST TUBERCULOSIS

The subject of the first discussion was propaganda and publicity methods. Dr. HARLEY WILLIAMS (medical commissioner of the association) described propaganda as the science of goodwill: "it removes suspicion and fear; and it teaches tuberculous patients, their friends and relatives to face the disease, to overcome despair, and make terms with the inevitable." The three facts to be made clear were that tuberculosis is not inherited and is therefore an avoidable disease; that it falls with most gravity on the young and the adolescent; and that it is curable under the national scheme. The criteria of success in propaganda were better notification, increased attendance at dispensaries, more contact examinations, and a lower death-rate.

Dr. VERONICA DAWKINS (resident medical officer, East Anglian Sanatorium) said that of the young women entering a sanatorium more than half did not remember having been taught anything about health or tuberculosis. No doubt much had been forgotten, but it was clear that full advantage has not been taken of the only way in which *systematic* study on this subject can reach the individual—i.e., via the schools, both elementary and higher. The raising of the school age to 15 in 1939 should bring better opportunities for instruction, and these opportunities must not be missed through lack of foresight and organisation. There was still so great a horror of tuberculosis that young people were often unwilling even to approach the subject, and propaganda must therefore be conscientious and reassuring. Sanatorium patients were potential propagandists, and the coöperation of general practitioners must be sought untiringly.

Mr. P. S. RANKINE (secretary of the Central Council for Health Education) described steps to be taken in next winter's national campaign to bring the social services more to the knowledge of the people. The turn of the social hygiene and tuberculosis services was to come in February and March, 1938, and in the tuberculosis campaign the emphasis would be placed on the tuberculosis dispensary, as being the point of contact between the service and the public. The aim of propaganda should be not merely to convey information to the ignorant but to overcome obstacles in the mind of the prejudiced. Much could be done through what advertisers called "existing audiences"—namely, those who met regularly as women's institutes, mothers' unions, British Legion clubs, church and chapel organisations, political clubs, sports associations, and the like. The aggregate of such audiences was estimated at about 16,000,000 and the familiar surroundings of a regular meeting place provided the best possible psychological background for propaganda. The film had become an essential part of any public health meeting and cinema proprietors would often coöperate if official visits by members of the civic body were arranged. Similarly local officials might speak to audiences gathered to listen collectively to radio broadcasts. Whatever else was done, however, the poster remained an essential part of any propaganda campaign, and its function was to be a constant reminder. Propaganda, in fact, must advance on all fronts or it could not advance at all.

ENVIRONMENT: THE OPEN-AIR SCHOOL

Dr. RALPH WILLIAMS (medical officer of the Board of Education) said that the great defects of civilised environment were confinement and lack of fresh air, often with bad housing and overcrowding. The open-air school afforded conditions that stimulate metabolism and eliminate the risk of droplet infection, also providing rest. By educating the child and the public and by building up the child's nutrition, it had a definite place in the prevention of tuberculosis.

Mr. GEORGE WIDDOWS, F.R.I.B.A., spoke on the evolution of school design, ending his paper with the words:—

> "For many, many years I have written and spoken on these principles of ventilation, lighting, and heating, and at the time of my retirement I retire not altogether happy, for I see schools still incorporating out-of-date things. I see architects still designing schools on out-of-date methods, and I have yet to find in these days medical men with the enthusiasm of Dr. George Reed and Dr. Sydney Barwise."

Mr. NORMAN WHATLEY described conditions at a public school, Clifton College, of which he is head master. He said that of late years the quantity of the food given had been much increased and that the boys had more sleep. "My purely amateur opinion," he added, "is that this is probably at least as important as anything else. The number of boys who put on weight in term time but lose it in the holidays bears this out, and I cannot help wondering whether, in the national campaign for physical fitness, much more emphasis ought not to be put on sleep. It is in sleep quite as much as in food that the boy of the educated classes has at present an advantage."

The need of rest was also emphasised by Dr. N. T. K. JORDAN (tuberculosis physician for Breconshire and Radnorshire) who described the work of Highland Moors, a residential institution near Llandrindod Wells. "Among the present generation," he said, "there is a definite lack of parental responsibility, and a failure to realise the importance of sufficient rest to the growing organism." Regular periods for rest and exercise, proper time given to meals, and due regard to cleanliness, fresh air, and bodily hygiene were habits which the open-air school can inculcate in the child of to-day, and therefore the parent of to-morrow.

Dr. J. E. WILSON (medical officer of health for Mansfield) had been impressed with the rapid deterioration often seen when a child returns home from a sanatorium. Unfortunately not each "pre-tuberculous" child could go to an open-air school. Many school-children lived in dread of the attendance officer and it was clear that insistence on each of them attaining a certain standard of knowledge at a certain age broke down entirely when poor health was at the root of unsatisfactory school attendance. "It should be the aim of all schools," added Dr. Wilson, "not only to provide the necessary instruction in paths of knowledge, but also to establish a real appreciation of the healthy body—how this may be acquired and maintained." He expressed a hope that the beneficent effects of open-air education would react on the construction of the elementary school of the future.

NUTRITION

Dr. J. A. NIXON (emeritus professor of medicine in the University of Bristol) said it would be a grave

mistake to allow the idea to prevail that dietetic measures by themselves would prevent or cure tuberculosis. Nevertheless it would be unwise to conclude that under-feeding plays no part in determining failure of resistance to the infection. In underfed patients arrest of active tuberculosis was not to be expected. As for the diet to be given, the large intake of fat insisted upon by the older physicians had a scientific justification because fat does not increase the volume of respiration to the same extent as protein or carbohydrate. Increased weight was not always associated with improvement, but improvement in health would always lead to a gain in weight. The amount of food given should be slightly more than the patient's calculated calorie requirement. The younger the patient the greater proportionately was the protein and calorie requirement. At least half the protein should be first-class (animal) protein, and not less than half the total calories should be derived from carbohydrates.

Dr. P. A. GALPIN (tuberculosis officer for West Ham) had classified groups of children into fat-shy, meat-shy, and green-shy. A dislike of the protective foods was due either to swallowing of catarrhal products, eating sweets before dinner, mistaken parental methods of getting the child to eat, or bad methods of cooking. The person who left out the protective foods, green vegetables, and fat was more likely to develop tuberculosis; and the open-air school, by stimulating metabolism, cured faddiness and tended to establish healthy appetite. Like Prof. Nixon, he emphasised the importance of self-selection.

The same note was struck by Dr. F. M. F. MEIXNER (director of the Illinois Tuberculosis Association) who referred to the difficulties of open-air treatment in the United States, where the winters have long periods of cold. He also spoke of the danger of cloying the appetite with too much milk and of the fatigue caused by excessive homework.

THE TUBERCULOSIS DISPENSARY

The last discussion was devoted to the equipment and activities of the dispensary. Dr. CAMPBELL FAILL (tuberculosis officer for Bristol) described it as "the most important part of the tuberculosis scheme since it coördinated all the activities of the area, official or unofficial." He said that in Bristol he had the usual difficulty of persuading young adult contacts to attend for examination and he proposed in future—when any of them persistently refused to attend—to notify the panel doctor that they were contacts of a sputum-positive case. This would lead to more careful examination if the patient presented himself for any reason at all.

Other papers were read by Dr. W. T. MUNRO (medical superintendent of the Fife and Kinross Joint Sanatorium), Dr. LATIMER SHORT (chief tuberculosis officer for Somerset), and Dr. R. MELVILLE HILEY (tuberculosis officer for Glamorganshire). Dr. Hiley said that, of the patients referred to the main dispensary at Pontypridd, 36 per cent. proved to be suffering from tuberculosis requiring treatment while 64 per cent. showed no sign of active disease. He spoke of the importance of the patient's first visit to the dispensary:—

"On it I venture to think the ultimate prognosis in no small measure rests. It is generally agreed that the temperament of the patient plays a great part in the treatment of the disease; without the whole-hearted coöperation of the patient any and every form of treatment is likely to fail. I feel that the extra half-hour spent with each of these unfortunate sufferers, listening to their domestic difficulties and giving them a rough pathology of the disease—rough but convincing enough to impress upon them the necessity for carrying out that most difficult of all tasks, absolute rest—is time well spent. It gives them a confidence and a hope which our subsequent treatment could not do itself, but which will prove a marvellous asset to us and to them in the long course we have to run."

Dr. Hiley also maintained that the diagnosis and treatment of surgical tuberculosis should not be removed from the tuberculosis officer, for it was one of the most interesting branches of his work and served to stimulate his optimism. During the past five years domiciliary treatment of tuberculosis of bones and joints had been started in Glamorganshire, and the results had convinced him that it could be successfully carried out. Indeed, with patients of a certain kind of temperament, the results were likely to be better than those achieved in institutions.

The subject of this last session was chosen in celebration of the jubilee of the opening of the first British tuberculosis dispensary by Sir Robert Philip at Edinburgh in 1887.

BEIT MEMORIAL FELLOWSHIPS FOR MEDICAL RESEARCH

A MEETING of the trustees of the Beit Memorial Fellowships for Medical Research was held on July 9th for the election of fellows and other business. The trustees expressed their deep regret for the death at the close of last year of Sir Edwin Deller, who, since 1929, had given important help in his ex-officio trusteeship as principal of the University of London. He is succeeded in this appointment by Mr. H. L. Eason.

The trustees noted with pleasure the distinctions received by two members of the advisory board during the past year. Prof. J. Ledingham, F.R.S., had received a knighthood, and Sir Henry Dale, F.R.S., was awarded a Nobel prize for medicine. The honours gained by past fellows during the year include a K.C.B. granted in the list at the King's Coronation to the present secretary of the Medical Research Council, Edward Mellanby, F.R.S. (1910–12). J. McMichael (1930–34) was elected to the Johnston and Lawrence research fellowship of the Royal Society. The total number of fellowships held by full-time workers during the year 1936–37 remained unchanged at 24.

The following elections to fellowships were made:—

Fourth Year Fellowships

ROBERT PERCIVAL COOK, B.Sc. Melb., Ph.D. Camb. To continue his research on cholesterol metabolism in reference to the cause of atheroma in blood-vessels. At the Institute of Biochemistry, University of Cambridge.

STUART LAWSON COWAN, B.Sc. Lond. To continue his research on the neuromuscular transmission of nervous excitation. At the department of pharmacology of University College, London.

DAVID EZRA GREEN, M.Sc. New York, Ph.D. Camb. To continue his studies on intracellular enzymes and on the influence of vitamin B on oxidation processes. At the Institute of Biochemistry, University of Cambridge.

MAURICE JOWETT, D.Sc., Ph.D. Liverp. To continue his study of the action of narcotic drugs on the metabolism of the central nervous system. At the biochemical laboratory at Cardiff City Mental Hospital.

Junior Fellowships

IAN ALFRED ANDERSON, M.B. Aberd. Carnegie research scholar, 1929. Gold medal for most distinguished graduate in medicine, 1933. Resident medical officer, Aberdeen Royal Infirmary, 1933. Rockefeller fellow, 1934. Proposed

research: iron analyses of diets of women of the poorer classes at Aberdeen, and studies on the treatment of anæmia. At the metabolic research laboratory of the Aberdeen Royal Infirmary.

DESMOND BEALL, B.A. British Columbia, Ph.D. Toronto. Research fellowships at Toronto, 1932–35. Since 1935 attached to National Institute for Medical Research, London. Proposed research: sterol metabolism, with special reference to sex hormones. At the department of pathology of the British Postgraduate Medical School, London.

JAMES COWANS CHALMERS, B.Sc. Glasg., A.I.C. Since 1933 biochemist to Glasgow Royal Cancer Hospital with research grant from British Empire Cancer Campaign. Proposed research: the rôle of polycyclic hydrocarbons in experimental tumour production. At the Glasgow Royal Cancer Hospital.

FREDERICK COLIN COURTICE, B.Sc. Sydney, D.Phil. Oxon. Rhodes scholar, 1933. Proposed research: the influence of insulin and endocrine secretions on the metabolism of prolonged muscular exercise. At the Physiology Laboratory, University of Oxford.

HUGH DAVSON, B.Sc. Lond. Rockefeller fellow at Pennsylvania University, 1936. Proposed research: the cause of primary chronic glaucoma of the eye. At the department of physiology and biochemistry of University College, London.

THADDEUS RUDOLPH ROBERT MANN, M.D. Lwow, Poland, Ph.D. Camb. Rockefeller research fellow at Cambridge since 1935. Proposed research: on intracellular compounds of blood pigment and the metabolism of oxalic acid in mammalian tissues. At the Molteno Institute, University of Cambridge.

ANTOINETTE PIRIE, Ph.D. Camb. Research fellowship, Newnham College. Research grantee of Medical Research Council since 1934. Proposed research: the metabolism of filtrable organisms by analysis of their enzyme systems. At the Institute of Biochemistry, University of Cambridge.

DEREK RICHTER, B.Sc. Oxon., D.Phil. Munich. Research grantee of Medical Research Council. Proposed research: the action of adrenaline and related substances on the metabolism of individual organs. At the Institute of Biochemistry, University of Cambridge.

All correspondence of fellows and candidates should be addressed to Prof. T. R. Elliott, M.D., F.R.S., hon. secretary, Beit Memorial Fellowships, University College Hospital medical school, University-street, London, W.C.1.

BUDAPEST

(FROM OUR OWN CORRESPONDENT)

NEW TREATMENT OF DIABETIC ACIDOSIS

A SENSATION has been caused here by the report of Prof. A. Szent-Györgyi on his discovery that succinic acid is capable of stopping acidosis in diabetics. Prof. Szent-Györgyi, who holds the chair of medical chemistry at Szeged, made his experimental study in collaboration with Dr. Stephan Rusznyák, director of the medical clinic there. Competent authorities say that this is the greatest discovery in the domain of diabetes since the discovery of insulin by Banting and Best.

It was the study of the mechanism of biological oxidation that led to this latest discovery. Investigations carried out at the Szeged institute by Laki and Banga have shown that the pyruvic acid is an important key to the intermediary metabolism of carbohydrates. Another worker in the institute, Ernest Annau, discovered that the C_4-dicarboxylic acids play an important part in the dehydration of pyruvic acid. The hydrogen split off from the pyruvic acid is taken up by the C_4-dicarboxylic acids. If, however, these catalytic C_4-dicarboxylic acids for some reason cannot perform their function, the oxidation of the pyruvic acid becomes disturbed and this takes up less than one atom of oxygen to every molecule, the final product being acetone.

These observations led Prof. Szent-Györgyi to assume that in diabetes also acetone is formed not from fats but from pyruvic acid, which is thus the source of acetone and of those organic acids that lead to the state of acidosis. This suggested that the cause of the ketosis of diabetes is a disturbance of the catalytic function of the C_4-dicarboxylic acids, which results in the formation of acetone and hydroxybutyric acid from pyruvic acid. There is no difficulty in supposing that there is this failure in the function of the C_4-dicarboxylic acids, especially since there is only a very small quantity present, in spite of its important rôle. It is easy to imagine that in diabetes this small quantity of dicarboxylic acid is formed with greater difficulty or decomposes more easily, and thus the amount is deficient. It is thus possible to remedy the disturbance of metabolism leading to acidosis by introducing dicarboxylic acids artificially. Their total quantity in the adult person is only about 5 grammes. From this Szent-Györgyi concludes that this must be about the therapeutic dose. In the experiments the very cheap C_4-dicarboxylic acid, succinic acid, was selected, and these proved that diabetic acidosis can in fact be remedied by a relatively small dose. It has no direct action upon the hyperglycæmia, for clearly the small quantity necessary cannot act here as a source of energy, and the mechanism of its action is different from that of the antiketogenic substances formerly used.

So far 5 patients have been treated at Dr. Andreas Korányi's clinic, with very satisfactory results in every case, but particularly in the following.

The patient had been under treatment for severe diabetes for many years and in spite of a strict diet and 70 units of insulin daily, she had been admitted to the clinic several times with severe ketosis and verging on coma. Although insulin was discontinued, the severe acidosis ceased on giving succinic acid. That this was not due to the rigid observance of the diet was proved by the fact that three days after ceasing to administer succinic acid acetone reappeared in the urine, though the diet remained unchanged, and again disappeared when succinic acid was given for only two days.

The specific antiketogenic effect of succinic acid is best proved by the fact that in this severe case on the withdrawal of insulin not only was the acetonuria not increased, but it had entirely disappeared in a few days. Szent-Györgyi and Korányi then deliberately gave their patients a diet rich in fats to produce an acidosis. The ketonuria ceased completely in four of the cases while in the fifth the drug was only partially effective. In these cases a dose of 10 g. was given by mouth, but it was found that this could be quickly reduced. In the more recent cases, now under treatment, 5 g. is being given. Prof. Szent-Györgyi persisted with the dose for two days after ketonuria ceased, and then he reduced the dose gradually. The succinic acid was given in 2 per cent. aqueous solution by mouth, taken three times a day after the principal meals. Succinic acid has a very unpleasant and persistent taste, and though some patients tolerated it, others refused to take it, so that it had to be given them in capsules. Szent-Györgyi and Korányi have been experimenting with the peroral administration of the calcium salt, which is much less unpleasant and can be taken as a powder.

FULHAM BABIES' HOSPITAL.—This hospital, which has been run as a voluntary institution since its foundation in 1915, is to be taken over by the Fulham council as part of their maternity and child welfare service.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month; his name can be seen later in the half-yearly index.

FROM A READER

III

AN elder statesman of the nineties—I cannot remember his name—declared that he saw only one real consequence of universal education: the remarks scrawled on the walls in public places appeared three feet lower down. This view is a trifle pessimistic, for we have become informed and sceptical about quite a number of things outside our own professional concerns. But whole new worlds have been opened for us, and in these we can still be imposed upon. The quack on his box at a fair, a self-constituted professor, nowadays raises a tolerant smile, and he owes any success that he has to the gambling spirit. We bet on the probability that a patent medicine sometimes cures, and after all doctors don't know everything; and though we buy the stuff, we flatter ourselves that we've no illusions about it.

The modern world has subtler means of overcoming sales-resistance. There is a myth current in London cosmetic circles, which must be very helpful in keeping the wolf from the beauty-parlour door. A whole pathology has been built up round the word "acid." "Acid" is at once a cause, a disease, and an almost ritual diagnosis. As far as I can judge from second-hand information, both professionals and clients believe in it. "Acid" is the collection of spots on the chin of adolescent young ladies. If fat doesn't reduce quickly during a course of massage, there must be a lot of acid in the deep tissues. Excessive flushing after massage or after a hot mud pack is due to acid and "high blood pressure." Is the skin dry; is there eczema or excessive dandruff; are there rheumatic nodules, or does the hair fall out? You've got acid. Is your complexion greasy? You've got acid. It will be noted that I am paraphrasing freely, for no cosmetic expert would openly refer to a client's skin as greasy; the lady is merely one of the "oilies." At first sight "oilies" appears a peculiarly nauseating category, not much better than "greasies," but a moment's thought reveals its superiority, for the best people, from Bulwer Lytton's Roman patricians at their toilet to the Noble Savages in the South Sea islands, use oil on their skin, so that a little "natural oil" on the face bears no stigma of vulgarity.

Acid is an ancient, well-established word. Here is no exploitation of up-to-date fancies, like skin-foods full of vitamins and hormones. It is not difficult to imagine how it has achieved its overload of cosmetic meaning. There is the chronic dyspeptic, who suffers from acid regurgitations, and "acidity" is often accompanied by a bad complexion. There are gouty nodules, formed, as every newspaper reader knows, by those wickedly sharp crystals of uric acid: these are readily confused with rheumatic and fibrositic nodules, and with the induration round old acne pits. The lay mind, too, is dimly aware of acidosis as an undesirable pathological state. These concepts probably fused when therapeutic masseuses were absorbed into the cosmetic profession. The beauty specialist, vaguely seeing acid behind all skin complaints, finally identifies with it anything she can remedy by her efforts, until before long she is removing "acid" through skin for almost any minor derangement of health. "Acid" is a success; for it is a forceful and impressive word, and yet its associations are vague enough to ensure that no one convicted of having it about her person will suffer any loss of amour propre.

* * *

The reading public has a peculiar regard for the scientist as a man. His opinions on Modern Problems get no more space in the press than the philosophy of a transatlantic flier or a pugilist; but they are accorded a little more weight. The layman has a healthy respect for an intellect trained in deduction and skilled in the pursuit of truth, and he supposes the scientific worker to be capable of thinking as competently about everyday existence as he does about his experiments. The layman must often be disappointed. Human beings are concerned with so many non-intellectual activities, like love and politics, that there is little opportunity for logical decisions about social behaviour, and even supposing a man could carry scientific objectivity into all his human relationships, he could not stand up for long against the enormous pressure of emotional circumstance; sooner or later prejudice creeps in. Scientists live and think just as sensibly and just as stupidly as any other class of people. It is surprising, however, that with such obviously fruitful logical powers at their command, they do not make a comparatively greater effort to live in a logical manner. The most likely explanation that suggests itself is that conscious logical manipulation of ideas has little part in the mental processes either of the home or of the laboratory. Research workers have a logical equipment of some sort, but the majority of them certainly don't acquire it as such. In an average scientific training there is very little specific teaching on the arts of thinking. A display of all the aspects of a particular science is supposed to inculcate mental flexibility in a student by example, much as the discipline of the study of Greek is supposed to induce a spiritual attitude compatible with the instincts of a gentleman. I suspect that advocates of both notions are rationalising after the event. A man who is conscious of a good logical equipment can appreciate its application in the sciences he learned in his youth. But it doesn't follow that his logic has been distilled, like an essence, from the complex structure of facts that he assimilated. And the tribute paid by our great men to the formative value of their early Greek studies is an argument that is immediately revealed as teleological when confronted with all the young students of Greek who have turned out to be numskulls.

* * *

Most scientific workers I have met appear to acquire their powers of straight thinking by trial and error. They learn arguments as pieces of reasoning attached to something they're interested in, and eventually acquire a battery of useful mental tricks. But it never occurs to some of them that what is valid for *a*, *b*, and *c* in the laboratory, can apply equally well to Tom, Dick, and Harry at home. Hence the man who is clever and open-minded in his subject and a fool outside it. Even within his own subject an

experimental worker often gets along in an extraordinarily haphazard fashion. One finds a series of papers, covering the work of several years—Studies in So-and-So, I to XXII. In them, the author fumbles his way to verifiable fact, driven here and there by this or that counter-argument, until he hits upon the right answer with about as much volition as the experimental rat completing its first round in the behaviourist's maze. There are not many extreme cases of this sort, but a good deal of knowledge is acquired by fumbling. The published fumble is regarded with suspicion, because it looks clumsy and is wasteful. Most of us manage to confine our fumbling to the privacy of the laboratory. Some confine it to their mental processes, and if it is done half consciously, so that the thinker cannot recall how he did it, the final answer comes out with the air of miracle, and another triumph is recorded for "intuitive" thinking.

I have never been able to acquire a proper respect for "intuitive" thinking, though some regard it as the peculiar glory of the genius. I can recognise that the genius of this sort fumbles fruitfully, but he fumbles, and in that differs only in degree from the rest of us. It is customary in this connexion to cite Clerk-Maxwell, who is said to have arrived intuitively at some of the conclusions in his electromagnetic theory of light; and to have demonstrated their mathematical truth subsequently. But there is no process whereby concepts that arrive out of the blue can be divided into those it would be worth while to rationalise, and those that can be dismissed as unprofitable; and for one Clerk-Maxwell there must be a hundred muddle-heads who engender nothing but metaphysical nonsense. Conscious logical reasoning is a much more praiseworthy activity, and ultimately of much greater value to humanity, if only for the reason that it is communicable. Mankind is already overloaded with facts, and it might be better to lose what the Clerk-Maxwells achieve in their "intuitive" moods, and avoid being overwhelmed by guesses at the truth masquerading as solutions to the riddle of the universe.

* * *

Intuition, as a substitute for thought, is, like the cocoa in the old advertisements, grateful and comforting. There is a widespread fundamental distrust of logic, for at one extreme logicians tend to mistake the logical truth of a conclusion for its value, and land us in a course of action that may be correct but is certainly fruitless. At the other extreme they behave like Pavlov's dog, which, accustomed to act in one way or another according to the exhibition either of a circle or an ellipse, could do nothing but tremble in an agony of indecision when shown a slightly eccentric circle. They worry at a question till it has, not two sides, but many, and forget that however many sides a question has, there is only one answer.

A people can afford to listen to logic when everything else is going nicely. Philosophic statesmen flourish in settled times, when their rational thinking merely crosses the T's of policies that already have a fair measure of approval. But when politics become urgent, when enthusiasm is needed in the drive for salvation, the rational thinker takes a back bench, or nurses the pale cast of thought in a concentration camp. It is a mistake for a politician to know too much, and to think too clearly, for he will only overburden his mind. Intellectual indolence has more than once been the making, and the saving, of the inspired amateur in English politics. If the logician survives in such times, it is because masterly inactivity is indistinguishable from careful indecision, and with our readiness to believe the best of our betters, we are prepared to find a clever tactician in the mugwump. (The etymology of this expressive word is obscure. It has been recently defined as one who sits on the fence, his mug on one side, his wump on the other.)

* * *

The dislike of exact thinking in politics is probably responsible for the popularity of dialectical materialism as a philosophy of communism. I am ignorant of the exact shades of interpretation that are infused, with Talmudic subtlety, into the tenets of this philosophical system. But it has been accepted in its broad outline as a philosophy of action for the rank and file who are no better dialecticians than I am, and from this uninformed point of view it seems to me an admirable apparatus for vague mental gymnastics. From the interaction of two contradictory theses, or ideas, there emerges a new synthesis. The interpenetration, for example, of capitalist and proletarian systems results in the communist state. Observed facts are hard things to deal with. Elevated to the rank of abstract theses, they become less uncompromising, more pliable, and can be manipulated in the grand speculative manner. Conclusions become all-embracing, and the world is remoulded nearer to Karl Marx's desire. Though it is claimed that dialectical materialism is the only scientific philosophy—other philosophies being "prescientific"—Soviet science remains patently Aristotelian in outlook, and there is nothing in it that could not have been satisfactorily achieved by plain logic; while Soviet politics, presumably based on the dialectic, are as muddle-headed as the democratic or fascist brands.

Communism will survive dialectical materialism, as adolescents outgrow their taste for midnight speculations about God and life. The philosophy made two valuable contributions to thought: it taught that all philosophies are socially conditioned, and it emphasised the need for abandoning static conceptions and for thinking in terms of processes. But processes are difficult to define clearly, and a technique for thinking about the undefinable was bound to become the delight of the arm-chair speculator and the refuge of the woolly-minded.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JULY 3RD, 1937

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 1803; diphtheria, 1094; enteric fever, 21; pneumonia (primary or influenzal), 589; puerperal fever, 39; puerperal pyrexia, 111; cerebro-spinal fever, 15½; acute poliomyelitis, 8; acute polio-encephalitis, 2; encephalitis lethargica, 2; relapsing fever, 1 (Uckfield R.D.); dysentery, 35; ophthalmia neonatorum, 104. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on July 9th was 3055, which included: Scarlet fever, 756; diphtheria, 826; measles, 179; whooping-cough, 479; puerperal fever, 17 mothers (plus 9 babies); encephalitis lethargica 285; poliomyelitis, 3. At St. Margaret's Hospital there were 24 babies (plus 11 mothers) with ophthalmia neonatorum.

Deaths.—In 124 great towns, including London, there was no death from small-pox, 1 (0) from enteric fever, 8 (1) from measles, 4 (0) from scarlet fever, 18 (7) from whooping-cough, 20 (2) from diphtheria,

(*Continued at foot of next page*)

CORRESPONDENCE

PASTORAL PSYCHOTHERAPY

To the Editor of THE LANCET

SIR,—I have received, as I presume have other medical men, a circular advertising the Guild of Pastoral Psycho-Therapy. The aim of this guild is apparently to "train" the clergy to perform this branch of medicine. (Not apparently so much for the benefit of the patient but because "there is a growing disposition on the part of the public to accept the facilities thus offered and to take to the medical psychologist many problems of inner life about which, hitherto, the minister of religion has been consulted"—i.e., the clergy feel a loss of prestige.) To my surprise I find that this is supported by a small number of medical men. I cannot think that it was realised by them that they were encouraging an incursion of the unqualified into the realm of medical practice. This is particularly unfortunate since psychotherapy has at last won its spurs and is being appreciated by the majority of the medical profession.

The viewpoint of the clergy—i.e., right and wrong, sin, and the need for punishment—is incompatible with the detached, unemotional, scientific point of view of the qualified physician. The neurotic has already his load of guilt and to instil the idea of sin will inevitably make him worse rather than better. Unless the clergy are willing to abandon many of their fundamental principles they must abandon psychotherapy.

This question arouses the old controversy of the lay analyst and the dangers of an outbreak of general paralytics and cerebral tumours "analysed" until too late for treatment.

Lord Horder's withdrawal of his name from this project makes it appear that medical men were asked to support it and did so under a misapprehension. It is presumed that reputable medical men will recognise this and withdraw as gracefully as Lord Horder has done. In conclusion might I say that I am not hostile to religion in its proper sphere, but that sphere certainly is not medicine.

I am, Sir, yours faithfully,

London, W., July 9th. CLIFFORD ALLEN.

FLUORESCENCE MICROSCOPY

To the Editor of THE LANCET

SIR,—The annotation in your last issue draws attention to a valuable technique, but suggests that the method is only open to the fortunate few who possess expensive quartz optical apparatus. I think this is misleading. I have employed fluorescence microscopy for many years, and recently have found it of great value in tracing the fate of fluorescent carcinogens of the benzpyrene type in the animal body. The apparatus used is as follows:—

A quartz mercury lamp, contained in a light-tight hood.

A screen of Wood's glass, transmitting an ultra-violet spectrum from 3800 to 3150 A.u.

An ordinary microscope with glass lenses and condenser, and glass slides and cover-slips.

With the possible exception of the quartz lamp and Wood's glass screen, the rest of the apparatus must surely be available in every biological laboratory. The cost of a suitable lamp with resistance is about £15, and any light-tight mounting, such as a large box with baffled ventilator, is suitable. The Wood's glass screen costs about 45*s.* for a screen 4 in. by 3 in., but smaller screens are quite suitable. Most laboratories can meet expenditure of this order, whereas the cost of quartz condensers and slides is greatly in excess of this.

I draw attention to this because I believe there is a widespread belief, even amongst medical men that glass cuts out all ultra-violet rays. Actually, Wood's glass cuts out practically the same range of the ultra-violet spectrum as does ordinary clear glass, with the addition that it cuts out the bulk of the visible spectrum. Consequently, when this filter is used, there is no advantage to be gained in using quartz condensers and microscope slides, though these may be necessary for certain research purposes. Care must be used in the selection of the mounting media, as many of these are fluorescent; but water or saline are suitable for most biological material and serve for the time necessary to make observations on their fluorescence under the microscope.

It need hardly be added that a dark-room is essential for this work, and that the eye must be adapted to the dark before the best results can be obtained.

I am, Sir, yours faithfully,

Glasgow, C.3, July 9th. P. R. PEACOCK.

MEDICAL PEACE CAMPAIGN

To the Editor of THE LANCET

SIR,—The unfettered thoughts of Twelfth Man, your contributor in *The Lancet* of June 26th, would suggest that his place in the team was not unwarranted. He resents the suggestion that doctors should attempt a specific contribution to the subject of war and peace. Are we to sit quietly with hands clutching Air-Raid Precautions Handbooks 1–10 until a wave of destruction, the like of which the world has never seen before, breaks over our head, and then clinging to a mass-produced gas-mask and a bag of sand, assure the population that all is well?

The younger generation of medical men are not satisfied with attempts at repairing the hopelessly maimed, and they, taking inspiration from the preventive measures advocated by a number of their thoughtful predecessors, see no reason why similar attempts to elucidate causation should not be applied to war. Why should we stand abashed by the possibility of making a contribution to what is nothing but a human problem? It is suggested that there are professionals in this field whose job it is to deal with such matters. If we ask "What manner of men are these?" what answer would be given? Do they reside in the War Office, the Admiralty, or the Foreign Office? Maybe we are expected to see them amongst the great armament firms of the country.

(*Continued from previous page*)

46 (9) from diarrhœa and enteritis under two years, and 4 (0) from influenza. The figures in parentheses are those for London itself.

Measles was fatal in two cases at Birmingham; whooping-cough in three cases at Liverpool and at Manchester. The deaths from diphtheria were scattered over 14 great towns; 4 at Birmingham, 2 at South Shields. Liverpool had 3 deaths from diarrhœa, no other great town more than 2.

The number of stillbirths notified during the week was 300 (corresponding to a rate of 43 per 1000 total births), including 45 in London.

I would suggest that we as doctors are not amateurs at assessing human motives—and as is well realised the nation is but a conglomeration of individuals who motivate it. We cannot stand quietly aside watching the advance of an era of destruction which is bound to nullify any efforts we are at present making in the improvement of our race.

Twelfth Man is surprised at the lack of unanimity in answers he expects to various questions he poses. Has not this always been the case when study of any major problem has been commenced? Would he now fail to get unanimity on such questions as: In the eradication of rickets is slum clearance advised? Do lack of adequate food, the presence of insanitary housing, and tubercle bacilli in milk play any part in the maintenance of tuberculosis in the population? Would you as a doctor and a man advocate the abolition of these phenomena, or would the answer come "As men, these questions touch us nearly, but as doctors not at all?" Day by day medicine calls us to intervene further and further in all branches of human activity—we cannot and should not seek isolation behind shibboleths of scientific detachment. To-day the doctor is more than ever an integral part of a rapidly moving community. He should be prepared boldly to play his part, and in no sphere more than in that of preventing our present civilisation from hastening to its own destruction.

I am, Sir, yours faithfully,

London, W., July 12th. H. JOULES.

NOISE

To the Editor of THE LANCET

SIR,—I have just been discharged from a nursing-home, after an operation which caused me neither pain nor serious discomfort. I mention this fact, as I do not want it to be thought that I am making any complaint on my own account; but I wish, so far as possible, to obtain backing from the medical profession on a complaint, in many cases a serious one, which patients in these homes have, I believe, very good grounds for making, and which, even to one as little ill as I was, was most noticeable. This is the absolute lack of any decency or consideration on the part of a great many of the motoring public.

During the day I can understand that it is difficult to do much to prevent a great deal of the noise, but surely at night some sort of consideration towards a large number of invalids might be shown. Hooters were blown incessantly, all sorts of strange hooters, making all sorts of weird noises. The question of silencers was entirely disregarded. Speeding up the engines while going through the low gears and starting, after signal lights had held up the vehicle, was carried to the *n*th degree. I had the feeling that there were a great many young people dashing about, no doubt on their lawful occasions, in very antiquated cars, who wished to draw attention to what fine fellows they were (and what ancient vehicles they were driving!), by making a quite unnecessary noise.

I feel perfectly certain that if sufficient medical backing were given to the gravity of this nuisance, there would be practically no opposition in the House of Commons to the passing of measures which would inflict such penalties that this sort of thing would be stopped. But it would be of very little use taking this question up unless one were assured of the support of the medical profession. Unfortunately, in the House of Commons we have very few doctors who could speak on the subject, but as I have said above, I am certain that all members of the House would lend a sympathetic ear to any suggestion to put an end to the state of things which exists, and would assist in the rapid passing of any Bill which had the prevention of this nuisance as its object.

I am, Sir, yours faithfully,

N. STEWART SANDEMAN.

July 12th.

HEADQUARTERS OF THE NURSING PROFESSION

To the Editor of THE LANCET

SIR,—On reading your interesting notes on the new home of the General Nursing Council in Portland-place it occurs to me that it may be worth while to recall that No. 25, one of the demolished houses, was designed by the Adam brothers for the personal occupation of Robert Adam; and in view of the number of original decorative features that have been so skilfully incorporated in the new building it seems to me rather a pity that this personal association with the original architect has not been retained by choosing 25 rather than 23 as the street number for the new house. There seems to be a good deal of uncertainty as to who painted many of the pictures introduced by Robert Adam into his ceilings, but I rather doubt whether you are correct in attributing the paintings replaced in the new building to Cipriani. If my information is correct some at least of these are those which adorned the drawing-room ceiling at No. 25; this ceiling, the beauty of which lay as much in the delicacy of its plaster work as in the paintings, was one of the most notable decorative features of the house, and during the 22 years in which my father lived there it was commonly accepted that the paintings were by Antonio Zucci. Zucci had been associated with Robert in his work at Spalato, and he later accompanied James on his continental tour; he married Angelica Kaufmann as her second husband in 1780 and presumably left England with her when she returned to Italy the following year.

Another point of much more trivial nature may be of interest. When my father went to live at No. 25 in 1895 he was the first person allowed by the estate to engage in medical practice in Portland-place north of Duchess-street, and he was only allowed to put up a plate because the front door happened to be round the corner in New Cavendish-street. He was followed a few years later by Sir Charters Symonds (then Mr. Symonds) at No. 58; Sir Charters was not allowed to put up a plate, but he got over the difficulty very ingeniously by standing a visiting-card in a neat leather frame on a ledge inside the narrow glass window at the side of the front door. After this the ban appears to have been removed, for further invasion of this austere thoroughfare, plates and all, followed pretty quickly.

No. 25 was the scene of a somewhat unusual accident. A bolting horse and railway van careering up New Cavendish-street was deflected from its course and crossing Portland-place dashed into the railings of No. 25. Railings, horse, and van crashed into the area to the vast astonishment of the maids taking their afternoon rest in the front basement sitting-room. A crane was rigged up through the dining-room window and the van lifted to the street; relieved of this incubus the horse rose to his feet and was found to be unhurt, and with the aid of a little straw walked with some dignity up the winding area steps to the cheers of an admiring crowd. It is sad to relate that his good luck here availed the poor animal

little; he had taken the bit between his teeth before and the company decided that it was in the public interest to end his adventures with a bullet.

I am, Sir, yours faithfully,

GORDON W. GOODHART.

West Cromwell-road, S.W., July 10th.

TESTIMONIAL TO DR. F. W. EURICH

To the Editor of THE LANCET

SIR,—After being in practice as a consulting physician for over 30 years, and for 24 years professor of medical jurisprudence at Leeds University, Dr. F. W. Eurich has intimated his intention to retire from practice and to reside in the south of England. The very large number of medical practitioners who, during the long period of Dr. Eurich's work, have sought his aid in the treatment of their patients, including in many cases themselves and their relatives, are not willing that he should leave Yorkshire without having received from them some small indication of the great esteem in which he is held by all who know him. It is proposed that subscriptions limited to one guinea should be invited from all medical practitioners who have been associated with Dr. Eurich. It is also intended to present this token of esteem at a dinner to be held at 8 P.M. on Wednesday, Sept. 29th, at the Midland Hotel, Bradford.

We are, Sir, yours faithfully,

GEOFFREY PRIESTMAN,
Hon. Sec., Bradford Division, B.M.A.
F. E. CHESTER-WILLIAMS,
Hon. Sec., Bfd. Medico-Chirurgical Soc.

Bradford, July 13th.

THE SERVICES

HONORARY SURGEON TO THE KING

Surg. Rear-Admiral F. J. Gowans, M.B. Durh., has been appointed honorary surgeon to the King in the vacancy caused by the retirement of Surg. Vice-Admiral Sir Basil Hall, K.C.B., O.B.E., M.R.C.S. Eng.

ROYAL NAVAL MEDICAL SERVICE

Surg. Vice-Admiral Sir R. W. Basil Hall, K.C.B., O.B.E., placed on Retd. List.

Surg. Rear-Admiral P. T. Nicholls, C.B., granted rank of Surg. Vice-Admiral.

Surg. Comdrs. E. B. Pollard to *President* for R.N. College, Greenwich, and *Despatch*; F. B. Quinn to *Neptune* (on commg.); R. L. G. Proctor to *Courageous*, and as squadron medical officer; G. E. Heath to *President* for course; and G. S. Rutherford to *Drake* for R.N. Barracks, Devonport.

Surg. Lt.-Comdr. J. J. Keevil to rank of Surg. Comdr.

Surg. Lt.-Comdrs. W. M. Greer to H.M. Dockyard, Malta; J. C. Gent to *Nelson*; and W. R. S. Panckridge to *Victory* for R.N. Hospital, Haslar.

Surg. Lts. F. P. Ellis to *Medway*; and E. J. Littledale to *Caledonia*.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt.-Comdr. D. A. Imrie placed on the Retd. List.

Surg. Lts. S. E. Cooke to R.N. Hospital, Chatham; W. Gough to *Revenge*; and R. P. Prewer to *Curacoa*.

ARMY MEDICAL SERVICES

Col. A. Irvine-Fortescue, D.S.O., late R.A.M.C., having attained the age for retirement, is placed on ret. pay.

Lt.-Col. and Bt. Col. R. C. Priest from R.A.M.C., to be Col. with seniority April 15th, 1934.

ROYAL ARMY MEDICAL CORPS

Maj. J. Higgins to be Lt.-Col.

Maj. J. S. B. Forbes retires on ret. pay.

Short Service Commission: Lt. (on prob.) D. G. Levis is restd. to the estabt.

Lt. (on prob.) G. M. Robertshaw is secd. under the prov. of Art. 213 Royal Warrant for Pay and Promotion, 1931.

REGULAR ARMY RESERVE OF OFFICERS

2nd Lt. O. G. Wilde from Gen. List, Res. of Off., to be Lt.

MILITIA

Maj. E. A. Wilson relinquishes his commn. and retains the rank of Maj.

TERRITORIAL ARMY

Capt. A. A. Allison resigns his commn. and retains his rank, with permission to wear the prescribed uniform.

Capt. A. S. Henderson relinquishes his commn. on account of ill health.

Lt. P. R. Mitchell, from 4th Bn. Gordons, to be Lt. with seniority Dec. 23rd, 1936, next below Lt. J. M. Matheson, June 12th, 1937.

M. H. A. Davison (late Offr. Cadet, Durh. Univ. Contgt., Sen. Div., O.T.C.) to be Lt.

TERRITORIAL ARMY RESERVE OF OFFICERS

Capt. A. C. Sinclair, from Active List, to be Capt.

Capt. W. P. Kennedy, from Active List (Seconded), to be Capt.

ROYAL AIR FORCE

Wing Comdr. T. McClurkin to Special Duty List, while seconded for duty with the Medical Research Council.

Squadron Leader J. Parry-Evans to R.A.F. Depôt, Uxbridge, while attending post-graduate course of study at the Royal Infirmary, Edin.

Flight Lts. G. A. M. Knight to Central Medical Establishment, London; E. B. Harvey to Marine Aircraft Experimental Establishment, Felixstowe.

Flight Lt. J. F. Ziegler is transferred to the Reserve, Class D.

Flying Offr. E. H. E. Cross is promoted to the rank of Flight Lt.

Medical Branch.—Flying Offr. J. D. H. Cran to R.A.F. Station, Thornaby, and D. J. Dawson to R.A.F. Section, Hendon.

Dental Branch.—Flying Offrs. A. J. Clegg, T. A. Gray, to Home Aircraft Depôt, Henlow; F. V. Frank, J. F. M. Sampson to No. 1 School of Technical Training (Apprentices), Halton.

INDIAN MEDICAL SERVICE

Majs. to be Lt.-Cols.: L. K. Ledger and G. M. Moffat.

Lt.-Col. A. S. Leslie retires.

Indian Medical Department.—Lt. (Sen. Asst. Surg.) A. J. Gomez retires.

COLONIAL MEDICAL SERVICE APPOINTMENTS

The following medical officers have been appointed: Dr. E. A. Beet to Northern Rhodesia; Dr. G. F. Cobb and Dr. E. M. Clark to Kenya; Dr. I. M. Hill to West Africa; Dr. V. E. Donawa and Dr. D. R. Huggins to Trinidad. Dr. P. S. Selwyn-Clarke has been appointed director of medical services, Hong-Kong; Dr. Carmichael Wilson, senior medical officer, Gambia; and Dr. A. L. Krogh, senior medical officer (physician), Colonial Hospital, San Fernando, Trinidad.

ISOLATION HOSPITAL FOR MID-STAFFORDSHIRE.—The Ministry of Health has approved a scheme for the erection of a joint isolation hospital to serve Mid-Staffordshire.

LOWESTOFT AND NORTH SUFFOLK HOSPITAL.—On July 8th at this hospital the Duchess of Kent laid the foundation-stone of the nurses' hostel which is to be erected as a memorial to King George V at a cost of £12,000. She received over 200 purses, containing some £5000.

PARLIAMENTARY INTELLIGENCE

GROUNDS FOR DIVORCE

IN the House of Lords on July 7th the Marriage Bill was considered in Committee.

THE FIVE-YEAR PERIOD REDUCED

On Clause 1, which provides that no petition for divorce shall be presented to the High Court until five years have passed since the date of the marriage, Lord SALTOUN moved an amendment to insert at the beginning, "Except as otherwise expressly provided in this Act." He said this was necessary because of a later amendment to Clause 5, to enact that if one spouse against the will of the other refused to permit the birth of a child without reasonable cause it would establish a ground of divorce without delay. The divorce must not be unduly delayed since the prolonged use of contraceptives induced sterility. He thought that the use of contraception by one partner against the other's will was a crime and far worse than adultery.—Lord ELTISLEY persuaded the supporters of the Bill to reject the amendment; he thought it was clearly inadvisable, if not dangerous, to introduce a new ground of divorce without support such as that of the Royal Commission. Moreover, there was no definition of what was to be called "reasonable cause" for the use of contraceptives.

Lord JESSEL, for Lord Maugham, moved an amendment that the period should be reduced to three years. He said that while many considered five years too long, others thought that there should be no time limit at all, but there was no chance of the Bill passing in the House of Commons if the time limit was altogether removed.—Lord ELTISLEY said that the supporter of the clause generally believed that a limiting period would reduce the tendency to companionate marriage, emphasise the State's desire that marriage should be a permanent institution, and discourage rash and foolish marriages. It was difficult to lay down what that period should be. It might be a satisfactory compromise to reduce the period to three years, and he suggested that discretionary power should be given to the courts in exceptional cases. He was prepared to accept the two amendments in the name of Lord Maugham. After further debate the two amendments were agreed to.

After debate a motion by Lord REDESDALE to delete the clause was negatived by 88 votes to 74, and the clause as amended was ordered to stand part of the Bill.

INSANITY

On Clause 2, which sets forth the proposed grounds for petition for divorce, Lord ELTON moved an amendment to delete the paragraph that provides as a ground for divorce that the respondent "is incurably of unsound mind and has been continuously under care and treatment for a period of at least five years immediately preceding the presentation of the petition." He said this paragraph alone permitted divorce for misfortune, the misfortune of being "incurably of unsound mind." He quoted from the evidence given before Lord Gorell's original Commission the statement of Dr. Robert Jones, one of the two chief medical experts who testified on behalf of divorce for insanity "It has become an axiom in the study of prognosis as to mental disease that anything may happen in lunacy. Excepting what we call dementia . . . the most unlikely and unexpected recoveries take place." The whole tendency of modern psychology, Lord ELTON went on, was towards not recognising that any, or at any rate scarcely any, mental insanity was to be regarded as incurable? During the war many a case of shell-shock was pronounced incurable which was finally and permanently cured. Would not the experience of most of them when they consulted medical experts on some obscure physical condition, which was usually far less baffling than an obscure mental condition, that although those experts lavished the utmost devotion on the problem they almost invariably disagreed? Once they accepted the principle that divorce was possible because misfortune had unfitted the sufferer for fully discharging his marital functions then there were many other misfortunes which could be classed sooner or later in that capacity, such as some lingering physical diseases.

Lord GORELL said the majority of the Royal Commission after listening to the whole of the evidence came to the conclusion that insanity, with a definite safeguard, should be recommended as a ground for divorce. He earnestly hoped that their Lordships would retain this as one of the causes for divorce in the Bill.

The Archbishop of CANTERBURY said he felt bound to say a word in support of the amendment. They could not ignore the fact—he imagined Lord Dawson had accepted it—that they could not really speak of mental disease as being incurable. He himself had been a member of the Royal Commission, and he had been particularly impressed by the evidence of one who certainly at that time, it would be admitted, was a great authority on all matters of mental disease, Sir George Savage. After reviewing carefully his forty years' experience had come to the conclusion that he could not support the inclusion of insanity as a ground for divorce. The Archbishop thought that the majority of the expert witnesses before the Royal Commission were against the inclusion of this cause. For instance, four Commissioners in Lunacy, the Lord Chancellor's Visitor in Lunacy (Sir George Savage), and others who were familiarly dealing with people of this class every day, had brought home to the Commission that the apprehension that some approach of insanity might develop into a cause by which anyone might lose a home or spouse would have the gravest effect. He thought that the adoption of this clause would retard the recovery of those who were curable and sometimes would upset the balance of those who were liable to become insane.

Viscount CLIVE pointed out that in a very material and important matter the recommendations of the Royal Commission were not given effect to in this Bill. The Commission said:—

"We further recommend that the insanity should be found to be incurable to the satisfaction of the Court, and that this ground should only operate when the age of the insane person is, if a woman, not over fifty years, and if a man, not over sixty years. The last recommendation would exclude the case of senile dementia, and cases where there is no reasonable ground for dissolving the marriage, having regard to the age of the parties."

The evidence given by Dr. Robert Jones showed that in London alone at that time there were 7339 cases aged 50–80 to which this would apply; of men alone aged 60–64 there were 1442 cases. Not one of the doctors who had appeared before the Royal Commission had said that they were able to pick out the cases that would recover. Again and again before the Commission it had been stated that sane members of the community, particularly females, were liable to be upset as a result of proposals such as those contained in this Bill.

Viscount DAWSON OF PENN said that on essential subjects there was more general agreement in the medical profession that almost in any other. He thought it was common ground that they all ought to be as human as they could be, and most of them thought they were pursuing the Christian ideal. It was also common ground that this particular group of cases was one that demanded their very careful and merciful consideration because generally it was not a matter of fault, but one of misfortune. This was not strictly true, and he would only mention

as examples chronic alcoholism and syphilis. Still, broadly speaking, the element of misfortune did come into the question of insanity more than into that of adultery and cruelty. They had therefore to be very careful to hold the scales of consideration and justice as between the patient on the one hand, and the equally suffering partner and children on the other. From the speeches that had gone before, one would think there had been no suffering partner, but anyone who had had an opportunity of studying insanity in the home would often come to the conclusion that far more sympathy was to be extended to the spouse than to the patient, who felt things less acutely. Under Clause 3 of the Bill the insane patient must have had continuous treatment in some form of institution for a period of five years. That in itself was a great protection. It was a fact agreed by a fair consensus of opinion that the chances of recovery after five years' continuous treatment were small. To assert that anything in the world was "incurable," which meant 100 per cent., was not a very wise statement by a scientific man, and he was proposing to put in instead "one who is believed to be incurable." That, he thought, was a fairer and more accurate statement.

The prospects of recovery in the first year of treatment were very good, but the prospects grew less until after five they were very small. Therefore he put it to their Lordships that after five years, when the prospects of recovery for the patient were so small, was it not their duty to give the suffering spouse a chance of relief? They did not make it compulsory. They were apt to forget that the large majority of people with whom they were concerned in this Bill lived in houses of only a few rooms and therefore cases of cruelty or insanity, whether caused by drunkenness or drug addiction, pressed much more hardly on those sections of the population. Patients let out of an asylum were not normal and had to be treated with great care. They were easily fretted and made irritable, and why each time such a patient came out should the home be destroyed and the health of the other spouse endangered? He thought the people who fixed the period of five years had done so after great consideration and after getting advice from experts.

On the question of incurability, the only reason why he proposed to amend this paragraph was really for scientific accuracy. If he asked their Lordships to insert the words "believed to be incurable" that did not mean that the medical profession had the power to say that no case was incurable. Shell-shock during the War was on a totally different footing from cases of insanity which resulted from organic and structural disease. Cases, for example, of hardening of the arteries were completely incurable by the very nature of things, and there were certain definite structural causes of insanity which in their very nature must be incurable. Therefore, it was very important to distinguish between such cases and that large groups of functional cases which if they were put under treatment for five years would be cured, and most of them a long time before. But the large majority of patients who had been treated continuously for five years did not get well, and therefore when that period had passed they should in mercy and justice turn aside from the odd chance of the patient getting well and look after the spouse and the children.

It had been said, and it was said in the *Times* that day by Sir Reginald Poole, a very distinguished solicitor: "Think of what it would mean for an insane person to think of the prospects of divorce, of his feeling that he has been displaced in his home, that his children belong to someone else." The answer to that was perfectly clear; it did not take place. They were very apt to judge those who were mentally deranged in terms of themselves. In the large majority of cases where persons had been under continuous treatment for five years the acuity of mind had gone, the range of mental vision had contracted, the powers of appreciation had steadily declined, the point of view was narrower and they felt not as others might think they would feel. They become accustomed to their surroundings, they looked only a short way ahead, and their life and thought with the deterioration of their minds were entirely different. He himself had no fear on that point. There would be no substantial injustice done. He begged their Lordships in the interests of the nation and the spouse, without doing any substantial injustice to the patient, to pass the clause.

The Marquess of SALISBURY said that it was very significant that Lord Dawson had already abandoned in its integrity the word "incurable"; he used it, but he used it with great limitation. He had also spoken of insanity which was incurable in the great majority of cases; that was very significant, because it was an admission in effect that there was a substantial minority of cases which would turn out not to be incurable. Here were cases of insane persons, the great majority of whom would not recover, and Lord Dawson proposed that the substantial minority should undergo the risk of divorce. The Archbishop of Canterbury had shown that it was by no means proved that authority was all on the side of change. Their Lordships were asked to make a great decision, involving a very great principle, and he hoped that they would agree to the amendment.

The Bishop of BIRMINGHAM said he would like to stress the aspect of heredity. Excluding cases like chronic alcoholism or syphilis a man became insane because of something in his make-up; he inherited a highly organised nervous structure. He handed on his highly organised structure, which was part of his inheritance, to his children, and if his organisation was such as to render him liable to a break-down leading to incarceration in a mental home then there was more likelihood that he would hand on to his children a grievous type of instability which they might show as they grew to manhood. Their Lordships had been constantly told of the medical evidence before Lord Gorell's Commission—evidence given before 1912—but much progress in the study of inheritance had been made since that time. Mendel's great paper was rediscovered in 1900, but it was not really taken up by large groups of research students until about the time of the War. Since then, as everyone knew who had made even a cursory study of the literature, the volume of research had been enormous and the results were sometimes disquieting. The allied though quite different subject of mental defect was adequately provided for in the clauses relating to nullity, but one witness before the Brock Departmental Committee which had inquired into mental defect some years ago, had later said that probably inheritance existed in at least 90 per cent. of the known cases of mental defect. Inquiry into the inheritance of insanity was even more difficult than that into inheritance of mental defect; but there was no doubt whatever that a very considerable proportion of the cases of insanity resulted from a morbid inheritance. Were they to allow the possibility that a man carrying such a taint in his make-up that he had been for five years in a mental home might come back and produce more children? He could conceive nothing more awful than that a woman should be expected to bear children to a man whom she knew to have this taint. They might say that she ought to have discovered it before marriage, but nothing was more carefully concealed in all classes of the community; a fact that was particularly well known to all doctors in mental homes, for their endeavours to find insanity in the family in the past often failed because frank evidence was not forthcoming. From the point of view of heredity it seemed to him that they had drawn rather too stringent precautions and he would make it easier for the same partner to obtain relief.

Lord ADDINGTON said he had had experience with a mental hospital, both in visiting and in the discharging of patients. The progress of medical science had gone on for 25 years since the Royal Commission

and they looked forward to much progress in the years to come. While discharges after five years were not common they did exist, and it was extremely difficult to say whether any case was incurable. He thought a very dangerous principle was shown in this Bill to use this class of misfortune in this way.

Lord ELTISLEY said this matter was very carefully considered by the Royal Commission and it was evidently the view of the House of Commons that this paragraph should be included in the Bill. Its supporters were of the opinion that insanity was on quite a different plane from any other illness. While in physical illnesses there could be still a very real companionship between the parties, in insanity that companionship could no longer exist. He hoped the amendment would be resisted. It was negatived by 95 votes to 31.

Lord DAWSON said that he had been informed that the amendment he proposed to move, to insert the words "believed to be incurable," would probably not meet his purpose. Therefore he would not move that amendment at this stage, but would retain a discretion to revive it on Report.—Lord DAWSON had an amendment on the paper to add to paragraph (d) "or has during that period been subject to recurrent fits of insanity." He said that although he knew how tragic these cases of insanity were, he had failed to satisfy his own criterion and his own standard that they must hold the balance justly between the patient and the spouse. In cases of cyclical insanity, dangerous as those people were to the happiness of their homes, he was afraid that it would be true that when the patient came back from a period of insanity and re-entered the home he would know, and would suffer as a result of knowing, that he might be divorced, whereas in the case they had been discussing in the clause itself, at the end of five years he would in the majority of cases not know. With their Lordships' permission he would not move the amendment.

HOMOSEXUALITY

Viscount DAWSON OF PENN moved an amendment providing that a petition for divorce might be presented on the ground that the respondent had since the celebration of the marriage been guilty of the practice of homosexuality. The word "sodomy," he said, had in the course of time, become inadequate and unsuitable. It applied to a crime that was open only to the male, but the progress of knowledge had altered their conception, and they therefore had adopted the word "homosexuality," which referred to both sexes. That was one justification for the addition he suggested. Another was that they now looked on homosexuality as a pathological condition. He was not at all sure that in the future it might not be regarded as an insufficiency disease, and although it was true that the law must take cognisance of homosexuality and punish it in order to act as a preventive to potential offenders, the more reasonable view was gradually being adopted that it at any rate had one foot in the realm of disease and was not wholly in the realm of crime. This was an occasion for recognising, with advancing knowledge, the increasing tendency to regard it as a pathological process, which concerned those who had to deal with disease. For the purposes of the Bill, however, it would be entirely wrong to use any word which confined homosexuality to one sex. It was really time that there should be equality of treatment between men and women. For that reason also the insertion of this special paragraph was justified. They all knew that this particular offence was quite compatible with excellent qualities of mind and character, and it was most important to realise that in the case of individuals who had a leaning towards or attraction and affection for the same sex, whether they had a parallel affection for the other sex or not, it could not possibly be maintained that they were suitable people for marriage. Such people would frustrate the purpose for which marriage existed, and it would be a grave injustice to recognise any marriage in which homosexuality turned out to be existent in either of the parties. A further reason for his amendment was that homosexuality in all decent people hid its head, and it was almost impossible for the spouse to have the misfortune of finding out before marriage that the natural attraction of sex was absent and that the partner was homosexual. When that was discovered it ought to be a ground for divorce. There was every reason in favour of putting in this particular paragraph by itself, if only for the purpose of recognising that it was an offence, a misfortune, or a disease, whichever way they looked at it, equally in a woman as it was in a man. While a man at the present time could be open to criminal prosecution, a woman could not, but homosexual women could break up a home, as he had had sad experience of, just as easily as homosexual men.

The Archbishop of CANTERBURY said that Lord Dawson had used the word "practice." Did he mean some particular act, proved, of this particular tendency, or did he mean a continuing habit? The word "practice" seemed to be most dangerously vague. He also asked if it was not the case in Lord Dawson's experience, as it certainly was in his, that even these unfortunate tendencies could be cured, and whether this was not a case of a disease, if it could be called a disease, which was incapable of cure.

Lord DAWSON said he put in the word "practice" because individuals might be instigated into a single act of homosexuality partly by curiosity, partly because they might be potential homosexuals, and therefore open to the influence of an actual homosexual whom they happened to meet. Having had that experience, however, they might pull themselves up; very often they came into contact with a doctor or a friend. They were people who were perfectly capable, as he had knowledge, of being good spouses, and he put in the word "practice" for that reason. He meant it to imply a habit, a repetition, and not a single instance.

There was the question of cure. For practical purposes, he himself divided the homosexuals into those who were potential and those who were actual. Some of the offenders against whom he wished particularly to guard were those who were potential, because it was a fact that if one could only get the right influence to bear morally and physiologically, one could guide them into the natural physiological route. There was no more fascinating scientific study at present than the development of these imponderable forces. There was no doubt that a realm was being opened up which would enable more help to be brought to these people, provided they could be caught in the early stages. Whether they could be helped in later life he very much doubted.

Lord ELTISLEY said he resisted the amendment because this recommendation was not one made by the Royal Commission, and it was dangerous to endeavour to introduce a new ground of divorce of this character into the Bill.—Lord DAWSON begged their Lordships not to decide by the knowledge of years ago. If they were going to make a change on a matter like this, surely they must take cognisance of the progress in knowledge that had taken place in the last 25 years. If there was one thing that had been established in our legislation of recent years it was equality of the sexes. They ought to protect the man against the Lesbian just as they protected a woman against a male homosexualist.

Lord ATKIN said that as a judge he had come across this subject and he (Lord Atkin) was for seven years President of the Medical Legal Society, where it was discussed. He would not like it to be thought that the House of Lords rejected the more modern application of science as put forward by Lord Dawson, whom everybody trusted in the matter, without some reasoned objection to it. To begin with, he thought that it was not correct to say that these cases, though Lord Dawson did not say so, were the result of something in the nature of disease. It was quite certain in his experience that they were not. They were the

result of wicked impulses, capable of being controlled. Like other impulses of the kind, they could be checked by advice and by resolution, and they did not appear to him to be of the nature of a permanent infirmity that was always likely to affect the married life. The real answer probably at the present moment was that this was a subject which required very careful examination. If some time or other a Select or Departmental Committee considered this subject in all its branches, the result might be a very valuable report upon which the criminal law and the civil law might very well be amended. At the present moment surely it would be a mistake for their Lordships to send this amendment to the House of Commons with the discussion that would be likely to arise about it. Later on, perhaps, it might have to be discussed, but at present the right thing was not to accept this new ground for divorce, put into the Bill for the first time.—The amendment was negatived.

HABITUAL DRUNKENNESS AND DRUG ADDICTION

Lord DAWSON, on behalf of Viscount Elibank, moved to add to the grounds of divorce, "is an habitual drunkard or an inveterate drug addict." For the purpose of these additional grounds a signed certificate would be required to be given in each case by two medical men, at least one of whom belonged to a panel of names approved by the Home Secretary on the nomination of the Royal College of Physicians, London. Those who held that marriage should be dissolved whenever such circumstances arose as frustrated the fundamental purpose of marriage could not to his mind logically exclude habitual drunkards or inveterate drug addicts. The medical profession on these matters was extremely conservative, and it required a very strong case for any doctor to say that a person was an habitual drunkard or an inveterate drug addict. Considering the whole attitude of mind of British medicine there need be no fear that doctors would not err on the side of caution.

Viscount BERTIE OF THAME moved the following amendment to Lord Dawson's :—

"The expressions 'habitual drunkard' and 'inveterate drug addict' mean a person who by reason of habitual drinking to excess of alcoholic liquor or of addiction to drugs, as the case may be, is (*a*) at times dangerous to himself or to others, or a cause of reasonable apprehension of such danger, or (*b*) incapable of managing his own affairs. The expression 'drugs' means drugs to which Part III of the Dangerous Drugs Act, 1920, applies."

Lord ELTISLEY said he hoped the amendment would not be pressed. This proposal was rejected in the House of Commons and he did not think that it would be to the advantage of the Bill that these words should be inserted. Drunkenness was very often accompanied by cruelty and anyone who could prove that he or she was subject to habitual cruelty would be entitled to a decree. If the drunkenness was continual, even if the man was not actually cruel, he would be guilty in law of constructive desertion and in such case therefore the injured spouse would be able to obtain a measure of relief provided the cruelty was continuous for three years. Both amendments were negatived and Clause 2 and Clause 3 (Insanity Definition) were ordered to stand part of the Bill.

OTHER GROUNDS

On Clause 5 (Decree of Judicial Separation), Lord ATKIN moved an amendment that a ground for judicial separation should be failure to comply with a decree for restitution of conjugal rights, or on any ground on which a decree for divorce *a mensa et toro* might have been pronounced immediately before the commencement of the Matrimonial Causes Act, 1857. This, he said, covered the case of rape and so forth. It included cases of gross indecency and probably covered generally the case of homosexuality.—The Earl of DROGHEDA said that in principle the promoters would accept the amendment, subject to it being seen later what its effect would be when it could be dealt with on the Report stage. The amendment was agreed to and the clause, as amended, was ordered to stand part of the Bill.

On Clause 6 (New grounds for nullity), Viscount CECIL OF CHELWOOD moved an amendment to provide that a marriage should be voidable on proof of unsoundness of mind not only at the time of the marriage, but within twelve months after marriage. He suggested that if, for example, a woman went mad within six months of marriage that ought to be conclusive evidence to satisfy a Court that she was not really in a condition to give true assent at the time of her marriage.—Lord ATKIN said that the suggestion was entirely contrary to principle. Nobody ever heard of nullity on a ground which was not existent at the date of marriage. There must be some ground which existed at the time of marriage; otherwise they would have divorce. Unsoundness of mind might arise twelve months after the marriage through a cause which had nothing in the world to do with the condition of the marriage. It might be the result of childbirth, and it was not an uncommon consequence of childbirth.—Lord DAWSON said it was a rather narrow issue which was raised by Lord Cecil. It was well known that mental disease might be so latent that it might be an unknown ground of suspicion. If it remained a suspicion then nullity would not obtain, but if in the consequence of things in that marriage the symptoms were manifest and fully developed six or eight months afterwards they were often quite able to say that these rather vague symptoms of the earlier time of the marriage were really nothing but the beginning of a disease that was then in its initial stage. He thought on that ground the bulk of scientific opinion would be with Lord Cecil, but clearly in order to establish that case the Court would have before it experienced scientists who would be able to give evidence as to whether that was true in the particular case or not.—Viscount CECIL of CHELWOOD asked those in charge of the Bill whether they would consider before the Report stage some provision to the effect that if one of the parties went mad within a year that should be prima facie evidence, which could be rebutted, of unsoundness of mind at the time of marriage.—Lord ELTISLEY said that they were quite prepared to consider the matter, and the amendment was withdrawn.

Lord GORELL moved an amendment to make paragraph (*b*) of the clause read as follows :—

"(*b*) that either party to the marriage was at the time of the marriage of unsound mind, a mental defective within the meaning of the Mental Deficiency Acts, 1913 to 1927, or subject to recurrent fits of insanity or epilepsy."

He said his point was that mental deficiency, if it was a ground for nullity should exist at the time of the marriage. He thought that the clause was originally designed to meet the case of a person who was mentally deficient at the time and then was placed under restraint twelve months afterwards. He understood that that would lead to the very undesirable result that some unscrupulous person might marry someone who was mentally deficient, obtain their money, then get them placed under restraint within twelve months, and have the marriage annulled. The amendment was agreed to.

Lord DAWSON moved an amendment providing that it should be a ground of nullity if either party to the marriage had been within twelve months prior to the time of the marriage guilty of the practice of homosexuality. The noble viscount said he would not repeat the arguments which he had put forward earlier in the evening, but he moved this amendment because he thought it was of even greater importance where a question of nullity was concerned, because homosexuality might very easily not be manifest, and could not be manifest in the social circumstances prior to the marriage. On Lord ELTISLEY's request the amendment was rejected.

Lord DAWSON had handed in a manuscript amendment to insert the word "communicable" before

venereal disease in the clause. He said that this amendment raised a matter of considerable difficulty. If they left out "suffering from venereal disease" they might land themselves in the position that someone might have had venereal disease which some authorities regarded as not being cured, notwithstanding the fact that its manifestations had passed. That would be met by inserting the word "communicable." On the other hand, suppose at the time of the marriage one of the spouses had a very early stage of locomotor ataxy which might easily remain undetected unless there was a special examination. It would be rather serious if the marriage could not be voided if, for example, during the months subsequent to the marriage the disease developed. He did not see the solution of that at the moment, but with their Lordships' permission he would consult with his professional friends in order to see if anything could be done to meet the difficulty. With that reservation he would not move the amendment at this stage.

The Marquess of READING moved an amendment to prevent a husband by forcibly having marital intercourse with his wife destroying her right to apply to the Court to have the marriage annulled. Lord ELTISLEY accepted the amendment which was agreed to.

Lord ATKIN moved an amendment providing that any child born of a marriage avoided pursuant to the paragraphs on the clause dealing with unsoundness of mind and venereal disease should be legitimate notwithstanding that the marriage was so avoided.

Lord ELTISLEY accepted the amendment which was agreed to, and Clause 6, as amended, was ordered to stand part of the Bill.

The remaining clauses were also ordered to stand part of the Bill and the Committee stage was concluded.

NOTES ON CURRENT TOPICS

Road Accidents

On July 9th in the House of Commons, Mr. BURGIN, Minister of Transport, reviewing the work of his Department during the year, said that a most important development in connexion with the administration of road traffic had been the appointment of accident officers in each district whose duties were to log accident statistics under certain arrangements with local authorities, and the ascertainment of causes with a view to prevention and to remedial measures being taken. During the last calendar year there were killed on the roads in Great Britain 6561 persons. Of this total 3068 were pedestrians, 1498 pedal cyclists, and 1076 riders of or passengers on motor-cycles. It was rather distressing to find the very large percentage of breaches of one or other of the elementary provisions of the Highway Code that were frequently committed by a large number of users of the highway. While not imputing blame, his desire was to invite the coöperation of all who used the roads to realise that this was not a pro-motorist contra-pedestrian problem. He was hoping that by giving attention to the logging of road facts the public would become increasingly alive to the advisability of greater care. It was now established beyond all contradiction that the taking of remedial measures reduced the number of street accidents, and he thought there should be more remedial measures. There was no ground for complacency as to what had happened this year up to date on the roads. There was an increase both in killed and injured and the increase was most marked among pedestrians. There were 150,000 more motor vehicles on the roads than there were at this time last year and in terms of percentage that was nearly 6 per cent. more vehicles on the roads of this country. Most of the accidents were preventable; there was only a very small portion of them that was not so. During the first half of 1936 41 per cent. of the pedestrians killed or injured were under 15 and the graph of the fatal accidents which was kept in his Department showed that a very pronounced accident peak occurred at the age of about five. The peak period of danger for pedal cyclists was roughly 14 or 15—just when the boys and girls were for the first time beginning to use pedal cycles on the roads. It was significant that this relaxation of control prior to a full appreciation of the danger of being on the road at all was the moment at which the maximum number of accidents occurred. He thought that parents had an obvious responsibility in this matter of the safety of their children.

In the House of Lords on July 12th the Physical Training and Recreation Bill was read the third time and passed.

In the House of Lords on July 13th the Royal Assent was given to the Methylated Spirits Sale by Retail (Scotland) Act, the Trade Marks (Amendment) Act, and the Physical Training and Recreation Act.

QUESTION TIME

WEDNESDAY, JULY 7TH

Distribution of Industrial Population

Mr. LAWSON asked the Prime Minister if he was now in a position to state the terms of reference and the personnel of the Royal Commission to inquire into the question of the geographical distribution of the industrial population.—Mr. CHAMBERLAIN replied: Yes, Sir. The King has been pleased to approve the setting-up of a Royal Commission to inquire into the question of the geographical distribution of the industrial population. The terms of reference are: To inquire into the causes which have influenced the present geographical distribution of the industrial population of Great Britain and the probable direction of any change in that distribution in the future; to consider what social, economic, or strategical disadvantages arise from the concentration of industries or of the industrial population in large towns or in particular areas of the country; and to report what remedial measures, if any, should be taken in the national interest.

The members of the Commission are: The Right Hon. Sir Montague Barlow, Bt., K.B.E., LL.D. (chairman); Prof. Leslie Patrick Abercrombie, F.R.I.B.A.; Mr. Ernest Bevin; Mr. Francis D'Arcy Cooper; Mrs. Hermione Hichens, A.R.R.C.; Mrs. Margaret Neville Hill; Prof. John Harry Jones; Sir Francis Joseph, K.B.E., J.P., D.L.; Mr. Parker Morris; Sir Arthur Robinson, G.C.B., C.B.E.; Mr. Sydney Arthur Smith, F.S.I., F.A.I.; Mr. George W. Thomson; and Sir William Whyte, O.B.E.

THURSDAY, JULY 8TH

Independent Medical Examination of Motor-drivers Charged with Drunkenness

Sir JOHN MELLOR asked the Home Secretary whether any and what instructions were given to police authorities as to the right to examination by an independent doctor of a man detained on a charge of driving a motor-car while under the influence of drink.—Sir SAMUEL HOARE replied: All police forces have instructions that if a prisoner in custody on a charge involving drunkenness desires to be examined by a doctor selected by himself, the request is to be complied with, on the understanding that the prisoner will be responsible for the doctor's fee.

Sir J. MELLOR: Is the prisoner informed of his right to the examination at the time it is decided to send for the police surgeon, and will my right honourable friend agree that it is most important that, if possible, an independent doctor should be present at the time of the examination by the police surgeon?

Sir S. HOARE: I am not sure whether that is the case or not. I think I had better have notice of that question.

Health Insurance and Dental Benefit

Mr. JOEL asked the Minister of Health the cost of providing dental benefit as a statutory benefit; and whether there were any approved societies which now supplied it.—Sir KINGSLEY WOOD replied: The cost of providing dental benefit as a statutory benefit cannot be estimated with precision in the absence of reliable data

regarding the number of insured persons who would apply for treatment. Such information, however, as is available indicates that about 10 per cent. would apply for treatment each year at an average cost of about £4 per case. On this basis the cost would be approximately £7,000,000 a year. Dental benefit is provided as an additional benefit by 5000 approved societies and branches in England and Wales with a total membership of 11,800,000 representing 75 per cent. of the insured population, and the expenditure on this benefit in 1936 was about £1,750,000.

Medical Benefit

Mr. JOEL asked the Minister of Health how many persons insured for health under the State scheme had, within the past 12 months, not selected any panel doctor; how many had not needed the services of their panel doctor; and what was the average number of attendances of those who had utilised the services of their different panel doctors.—Sir KINGSLEY WOOD replied: The number of persons who have been insured for 12 months without selecting an insurance doctor is not available, but the number of insured persons at any given time who have not selected a doctor although entitled to do so is about 495,000 in England and Wales. As to the second and third parts of the question, a recent sample investigation of the official records kept by doctors showed that 43 per cent. of the persons who had been on doctors' lists throughout 1936 had not been seen in the year and that the number of attendances, including home visits, per patient seen during the year was 7·1.

Menace of Rheumatism

Mr. EDWARD DUNN asked the Minister of Health what measures he proposed to adopt, if any, to combat the growing menace to health caused by rheumatism; the number of insured persons chargeable to the insurance fund for the years 1934, 1935, and 1936; what had been the cost, and the number of working days lost, due to this disease.—Sir KINGSLEY WOOD replied: Treatment for this varied and complex group of diseases is available in most of the voluntary general hospitals and the general hospitals owned by local authorities, and there are a number of institutions which specialise in the treatment of certain rheumatic diseases. I shall continue to give careful consideration to this matter, but at present I do not propose to introduce any special schemes which would supersede the progressive and increasing provision now being made to combat and study the disease and with which my medical advisers are in close association. I regret that the information asked for in the last two parts of the question is not available.

Increasing Shortage of Nurses

Sir ROBERT RANKIN asked the Minister of Health whether his attention had been called to the increasing shortage of trained nurses and probationers; and whether, in view of the great expansion of the hospital system and public health services of the country in the last ten years, he could state what steps were being taken to ensure an adequate supply of nurses during future years.—Sir KINGSLEY WOOD replied: Yes, Sir. I have been informed that there is a shortage of nurses relatively to the increased demands for their services. The matter is receiving my close attention and I understand that the associations representing local authorities are in communication with the General Nursing Council regarding certain measures for meeting the situation.

Miss WILKINSON: Has the Minister called the attention of the voluntary hospitals to the necessity for reducing the hours and increasing the wages of their nurses, if they wish to get a sufficient number?

Sir KINGSLEY WOOD: This is an important matter, and I think that many hospitals are doing what they can about it.

Midwifery Schemes in Wales

Mr. TEMPLE MORRIS asked the Minister of Health the number of midwifery schemes which had been submitted to him for any of the districts in Wales; and which of these schemes he had sanctioned.—Sir KINGSLEY WOOD replied: Proposals under Section 1 of the Midwives Act, 1936, for a service of salaried midwives have been submitted by all the local supervising authorities in Wales, numbering 19. My formal sanction is not required to these proposals, but in three cases I have already informed the authorities that in my opinion their proposals are satisfactory, and in these and other cases the authorities are proceeding to put the proposals into operation. In some cases I am still in communication with the authorities regarding particular points affecting their proposals.

FRIDAY, JULY 9TH

Silicosis

Sir WILLIAM EDGE asked the Home Secretary the number of cases of silicosis recorded in the country as a whole during 1936, and the number of such cases in Leicestershire.—Sir SAMUEL HOARE replied: The total number of certificates of disablement or death from silicosis issued by the Medical Board in 1936 was 727, including 197 certificates in respect of death. I regret that information as to the number of cases in Leicestershire is not available.

MONDAY, JULY 12TH

Ex-Service Men and Medical Treatment

Mr. THORNE asked the Minister of Pensions if he could give the House any information as to the demand made by him from an ex-Service man for £25 12*s.* 6*d.* for medical treatment which was authorised and sanctioned by the Ministry; if he was aware that the man was under the control of the East Ham pension committee and had been entitled to insured medical benefit since July, 1931; why was the payment now demanded; if he was aware that the committee declared that the demand was illegal; and what action he intended taking about the matter.—Mr. H. RAMSBOTHAM replied: The Royal Warrants allow me to bear only such expenses of treatment as are not otherwise provided for. Periodical payments of medicines obtained by this officer have been made on the written undertaking given by him that if he became eligible under the National Health Insurance Acts he would inform the Ministry. It has recently been disclosed by him that he has been so eligible since July, 1931, and, at the officer's request, the Ministry is prepared to postpone recovery of the charges which were improperly imposed on public funds until September next when deductions from pension by small quarterly payments will commence.

Health Insurance: Sickness Benefit

Mr. HEPWORTH asked the Minister of Health whether any special inquiry was being made by his department into the alleged existence of an exceptionally large number of applications for sick benefit, especially among women; and whether any conclusions had hitherto been reached.—Mr. BERNAYS, Parliamentary Secretary to the Ministry of Health replied: An investigation is being made by my Department in conjunction with the Department of Health for Scotland, into the general question of the expenditure of approved societies on disablement benefit, but no conclusions have yet been reached.

TUESDAY, JULY 13TH

Working Hours of Pension Hospital Staffs

Mr. KIRBY asked the Minister of Pensions the number of hours per week normally worked by the indoor and outdoor staffs, respectively, of those hospitals and institutions controlled by his department.—Mr. H. RAMSBOTHAM replied: The hours worked weekly by hospital staffs vary with different grades. Nurses' duties vary from 57–61 hours a week for day duty and 78 hours for night duty, both inclusive of meal times. Massage staff and X ray assistants attend for 36 and 35 hours respectively, exclusive in both cases of meal times. Stewards, clerks, and orderlies are employed from 44–48 hours and domestics from 48–72. The only staff on outdoor duties are orderlies employed as gardeners, ambulance drivers, &c., who are subject to a 48-hour week.

THE LANCET 100 YEARS AGO

July 15th, 1837, pp. 569 and 589.

From a lecture on Materia Medica and Therapeutics delivered at the Windmill-street School of Medicine by Dr. GEORGE G. SIGMOND.

. . . In the coming on of consumption there is one great, and never-to-be-mistaken symptom, the state of the pulse, which too often escapes observation, but which reveals more than does the cough, the loss of strength, the emaciation of the body. It is singular that this, the pathognomonic symptom, which is peculiar to pulmonary affection, so often passes unheeded, that many of our best writers merely mention its quickness, and that, in the present day, some of those authors on diseases of the chest, who will hereafter be ranked among our classic medical authorities, devote so little attention to a diagnostic mark of such value—one which, in my mind, is of fully as deep importance as the signs that are conveyed to the sense of hearing by the stethoscope or by percussion. It has been generally acknowledged that certain individuals are incapable of the nice tact of distinguishing disease by the pulse. That there are many shades of distinction which can be perceived by but few, I have little doubt; but I think that the principal obstacle we have to encounter is the conveying to others the sensations which are excited in our own mind. The indication of consumptive tendency by the pulse is much more easily recognised than it is explained to another. . . . It is not that which is attendant upon fever, it has neither the strength nor the hardness of the inflammatory, nor has it the weakness nor the smallness which belongs to low fever, and in both of which states there may be increased celerity of the pulse; there is tension, but it is not the whipcord feel of inflammation; there is a vibration, but it is essentially distinct from that which betokens disease of the heart; it is extraordinarily dependent upon mental emotion, and its rapidity is excited by moral causes in a most surprising and unaccountable manner.

From a letter to the Editor from GEO. RAY, M.R.C.S., *of Milton, Kent, dated July 6th, 1837.*

SIR,—The time is fast approaching when cases similar to the one which I am about to narrate will have been so common as to render it a work of supererogation to record them . . .

My eldest son, a healthy boy, born in Feb. 1823, was the subject of congenital club foot. . . . All that skill could suggest or contrive was tried in vain, for at the end of fourteen years and two months, the boy appeared to be doomed to irremediable lameness. I had heard that Dr. Stromeyer, of Hanover, had divided the tendo-achillis, but, notwithstanding the most diligent inquiry, I could not learn that the operation had ever been attempted by an English surgeon. Great, then, was my delight on reading in THE LANCET of April 1st, 1837, an account of the discussion of Mr. Whipple's case before the *Royal Medical and Chirurgical Society*. . . .

On the 1st of May . . . Dr. Little divided the tendo-achillis, about an inch-and-a-half above the malleolus, by introducing a very narrow, slightly-curved, bistoury between the tendon and the deeper-seated muscles and tibial vessels, directing the edge of the knife against the front of the tendon, dividing it from within outwards, leaving the skin covering the tendon untouched. . . . Any separation of the divided ends of the tendon was prevented by placing the foot in its deformed position upon a stiff paste-board splint, applied along the outer side, and by adjusting the limb, with the knee bent, upon a pillow. . . .

4th day. The puncture firmly cicatrized, and Stromeyer's foot-board applied. The boy is perfectly well. . . .

10th day. . . . The bending of the foot upon the leg have been gradually continued, so that the foot at present is nearly at a right-angle with the leg, and all this has been affected without pain. He has been able for the last two or three days to walk about the room.

19th day. Today the use of Stromeyer's foot-board is partly discontinued, and he wears in its stead Scarpa's shoe, which tends better to overcome the too great curvature of the bones of the tarsus, now that the foot is bent to the right angle. . . .

At the end of six weeks and a few days my son returned home, and has since been steadily improving. He continues to wear Scarpa's apparatus, by night, and, during the day, a common laced boot, with an iron stem on the outside of the leg; his lameness is very slight, and becomes less daily. . . .

OBITUARY

AUGUSTUS ROLLO BALMAIN, M.D. Lond., D.P.H.

Dr. Balmain, who died of heart failure while abroad on a motoring holiday, had been deputy medical officer of health for Ilford for the past nine years. Born at Plymouth in 1890, he was educated there and at Birmingham University, going on to the Middlesex Hospital, from which he qualified M.B., B.S. Lond. in 1916. He then served in the R.A.M.C. accompanying the East African Expeditionary Force, with the rank of captain. After taking the D.P.H. at Oxford he became assistant medical officer of health in turn for Somerset, Birkenhead, and Colchester. In 1927 he went to Ilford as senior assistant and in the following year was appointed deputy. For some years he had charge there of the diphtheria immunisation clinics and of the open-air school, and was inspector of nursing-homes and of massage establishments. His contributions included several important papers on immunological problems written in collaboration with Dr. A. H. G. Burton. "Balmain," writes Dr. Burton, "had a fine knowledge of modern medical work and was himself a doctor whose opinion could be implicitly relied upon on any medical matter. He collaborated with me in a good deal of research work and records of cases which would have been quite impossible for me to have carried out without his assistance. He was a loyal colleague, ever anxious to assist any members of the staff." Dr. Balmain married May, daughter of William Girling, who survives him.

HENRY ARMSTRONG

THE death of Prof. H. E. Armstrong, F.R.S., on Tuesday, in his ninetieth year, ends a remarkable career, which touched medicine closely. He had studied under Ludwig in Leipzig, and worked at the medical school of St. Bartholomew's Hospital before being appointed to the chair of chemistry at the old London Institution in Finsbury-circus. He used to say himself that had he realised that medicine was a branch of chemistry it would have had his life-long allegiance. As it was, he initiated the work which led to our conception of the action of enzymes; and if it were desired to express his life work in a phrase it would be as a master enzyme. For under Armstrong and his associate Ayrton the City and Guilds College at South Kensington became a training school of students in the methods of experimental inquiry. After his retirement from collegiate life he remained a constant stimulus to heuristic teaching—namely, the method of educating students to find things out for themselves—and to the end of his life he was a thought-provoking contributor to the columns of *Nature*.

LEVERHULME RESEARCH GRANT.—A Leverhulme research grant has been made to Dr. D. Elliot Dickson, colliery surgeon at Lochgelly, Fife, for an investigation into occupational morbidity in coal-miners.

MEDICAL NEWS

Royal College of Surgeons of England

A quarterly meeting of the council was held on July 8th with Sir Cuthbert Wallace, the president, in the chair. He was re-elected president and Mr. Victor Bonney, vice-president, and Prof. G. Grey Turner was elected vice-president for the ensuing year. Mr. C. H. Fagge, Mr. W. Sampson Handley, and Mr. Cecil P. G. Wakeley were admitted to the council.

Sir Hugh Acland, of New Zealand, brought to the council a message of greeting from the Royal Australasian College of Surgeons, to which college a message is being taken by Prof. Grey Turner.

The Hallett prize was awarded to Dr. A. J. Innes (Edinburgh) and the eighth Macloghlin scholarship to David Somerset Short of Bristol Grammar School. The following professors, lecturers and demonstrators were elected for the ensuing year: *Hunterian Professors:* Mr. P. B. Ascroft, surgical treatment of arterial hypertension; Mr. H. J. B. Atkins, chronic mastitis; Mr. J. I. Munro Black, lympho-epitheliomata; Mr. R. C. Brock, pathology, diagnosis and treatment of intrathoracic new growths; Mr. Maxwell Ellis, function of the bronchial tubes; Mr. T. Stewart Heslop, the neurogenic origin of peptic ulceration; Mr. J. Cole Marshall, detachment of the retina and the modern operative treatment; Mr. T. W. Mimpriss, histology and treatment of imperfect descent of the testis; Mr. R. T. Payne, cancer of the stomach as a surgical problem; Mr. Harold Rodgers, gastroscopic appearances of the "normal" gastric mucosa and its constitutional variations; Mr. T. F. Todd, rectal ulceration following irradiation treatment of carcinoma of the cervix (pseudo-carcinoma of the rectum); and Mr. W. E. Underwood, recent observations on the pathology of hydronephrosis. *Arris and Gale Lecturer:* Dr. John Beattie. *Erasmus Wilson Demonstrator:* Dr. L. W. Proger. *Arnott Demonstrator:* Dr. A. J E. Cave.

Dr. Proger was reappointed pathological curator of the museum, Sir Frank Colyer, hon. curator of the odontological collection, Mr. C. J. S. Thompson, hon. curator of the historical collection, and Dr. David Slome, a Mackenzie-Mackinnon research fellow. Mr. C. I. Pocock, B.Sc., was appointed the Charles Ryall library research assistant from Oct. 1st. The following assessors were appointed for the primary examination for the fellowship of the College which is to be held overseas during the coming year:—

Australasia: Melbourne—Prof. F. Wood Jones, F.R.S., and Dr. C. H. Kellaway. Sydney—Prof. A. N. St. G. Burkitt and Prof. W. N. Davies. Dunedin—Prof. W. P. Gowland and Prof. J. Malcolm.
India: Lieut.-Colonel F. J. Anderson and Lieut.-Colonel S. L. Bhatia.
Egypt: Prof. D. E. Derry and Prof. Gleb von Anrep, F.R.S.

Under the Moynihan bequest the council decided that not less than three or more than five lectures on the results of research in its application to surgery shall be given in alternate years by a lecturer who shall be styled the Moynihan lecturer. The offer of Mr. W. Laurence Cripps, of some of the original microscopic drawings belonging to his father, Mr. W. Harrison Cripps, was accepted by the council.

A diploma of membership was granted to W. B. Foster of St. Bartholomew's Hospital and licences and diplomas were granted jointly with the Royal College of Physicians to the following candidates:—

L.D.S.—A. E. L. Adeline, F. P. Alford, W. C. Allwright, G. A. E. Argo, G. C. Blake, J. M. Burnup, R. W. Caldwell, Pamela B. Chalk, T. L. Clark, N. M. Cripps, C. M. W. Debenham, J. F. van de S. De Villiers, Mary C. Dixon, Michael Frost, Munro Goldfield, D. L. Goodridge, A. H. Guest, R. P. Hancock, D. W. Harvey, J. F. Herbert, K. J. L. Hollington, J. D. Irvin, A. R. Levy, A. H. Mikhail, Franz Mosbacher, R. B. Neal, G. C. J. Pearce, D. A. Priestley, A. D. W. Robertson, D. B. Sedgwick, David Sigaloff, R. M. J. Siman, E. A. Syder, F. J. Summers, J. R. P. Thomas, J. E. C. Thorpe, F. A. Trent, W. H. West, T. L. Weston, P. D. Wharton, Ronald Wyer, and F. J. Younger.

D.P.H.—L. J. Bacon, T. E. Jones-Davies, J. MacC. Kilpatrick, A. E. Lorenzen, Chandra Mani, J. N. Matthews, Doris Onions, T. B. Patel, and H. E. Raeburn.

D.P.M.—M. B. Brody, Hilda M. Capes, Bridget Coffey, E. C. Dax, T. R. C. Fraser, J. B. Gillen, W. G. Glassco, Joan E. Greener, Arthur Harris, G. T. James, C. A. Keane, J. S. Knox, E. H. Larkin, A. B. Monro, K. N. H. Rizvi, Kenneth Soddy, J. T. W. Spiridion-Kliszczewski, C. E. H. Turner, and G. P. B. Whitwell.

D.L.O.—G. N. Barker G. A. Fraser, K. H. Hakim, Monté Jackson, J. A. Kersley, and G. P. Rayen.

D.A.—M. C. Canguli, R. E. Pleasance, A. F. Potter, W. B. Primrose, and William Sankey.

University of London

At recent examinations the following candidates were successful:—

D.P.H.

J. K. Adranvala, Beatrix H. Bakewell, Lalage R. A. Benham, D. M. Blair, Kathleen G. Brimelow, P. N. Chatterjee, *A. B. Christie, Kitty K. Conrad, J. S. Cookson, Teresa I. M. Craig, Iris M. Cullum, C. F. Cumings, Enid S. Davies, B. K. de Silva, Samuel Graham, Eva M. Gray, E. H. Harte, R. M. M. Hunter, J. D. Lendrum, S. E. D. Masilamani, B. B. Mukerjee, Douglas Murray, A. F. S. Perera, Violet M. Spiller, Margaret B. Steel, Tsung-Sing Sze, *J. W. P. Thompson, A. F. Turner, V. M. Vatve, Sarah C. B. Walker, L. A. F. Wiles, and Isabel A. M. Woods.

*With distinction.

Mr. R. J. Kellar has been appointed to the university readership in obstetrics and gynæcology tenable at the British Postgraduate Medical School.

Mr. Kellar is 28 years of age. He was educated at George Watson's College, Edinburgh, and studied in the University of Edinburgh, where he obtained the M.B. in 1931, when he was awarded the Buchanan scholarship in midwifery and gynæcology, the Annandale gold medal in clinical surgery, the Wightman prize in clinical medicine, and the Murchison scholarship in medicine. Since graduation he has held a Freeland Barbour fellowship in obstetrics, a Leckie-Mactier fellowship in medical research, and is at present the holder of a Beit memorial fellowship. After graduation he was in general practice for some months, and later held hospital appointments at the Royal Infirmary and at the Royal Maternity Hospital, Edinburgh. For three years he held the posts of gynæcologist and obstetrician to the Provident Dispensary, and later to the New Town Dispensary in Edinburgh, and for some months during that time he acted as assistant gynæcologist to the Deaconess Hospital. In 1935 he became assistant in the obstetric unit at University College Hospital, where he has been in charge of the postnatal clinic and of the pathological work; he is also carrying out experimental work at the Buckston Browne farm of the Royal College of Surgeons. He is a member of the Royal College of Physicians of Edinburgh and of the British College of Obstetricians and Gynæcologists, and a fellow of the Royal College of Surgeons of Edinburgh. His published papers include reports of experimental work on renal hypertension and nephritis.

Mr. Girling Ball has been elected chairman of the Brown Animal Sanatory Institution Committee for 1936–37.

University of Manchester

At recent examinations the following candidates were successful:—

M.D.

J. R. P. Edkins.

FINAL EXAMINATION FOR M.B. AND CH.B.

L. S. Anderson, J. C. Babbage, I. W. Ball, R. S. A. Beckett, G. H. H. Benham, Muriel L. Bennett, M. J. Blank, Tom Dinsdale, J. H. Ferguson, J. H. France, Rosaline Green, A. B. Hamer, R. S. P. Hawkins, F. G. Hibbert, W. S. Holden, Thomas Holme, William Ingman, Monica M. Job, Katharine I. Liebert, J. R. Monks, H. N. Osborne, Nydia E. Panton, A. F. Pearson, W. H. Purves, W. A. Robson, Nina Shtetinin, T. S. Stewart, Fred Stratton, and Norman Whalley.

Part I (Forensic Medicine and Hygiene and Preventive Medicine).—Norman Altham, J. N. Appleton, Muriel I. R. ApThomas, H. B. Austin, T. M. Brand, W. W. Burnett, T. E. A. Carr, J. E. Coates, A. E. David, D. B. H. Dawson, T. B. S. Dick, A. M. Dickson, Gerald Garmany, A. B. Hamer, Kenneth Harrison, Kathleen M. Henderson, A. G. Heppleston, C. P. Heywood, Barbara M. Jessel, F. A. Langley, Norman Levy, Louis Linneil, Donald Longbottom, Jean Mason, J. C. Mellor, Arthur Morgan-Jones, Sidney Mottershead, T. H. Norton, Mary B. Oakden, Lilian P. Parry, J. K. Rowson, Edward Saunsbury, M. R. Tomlinson, T. B. Whitehead, W. W. Wilson, and Frances T. Wright.

University of Aberdeen

On July 7th the following degrees were conferred:—

D.Sc.—A. W. Downie and H. E. Shortt (in absentia).

M.D.—* H. W. Fullerton, * E. J. R. Leiper, Helen M. Jardine, John Leiper, J. S. Walker, and D. E. Wilson (in absentia)

Ch.M.—*J. F. Philip.

* With honours.

M.B., Ch.B.—E. K. Cruickshank, J. G. Macarthur, Alexander Macdonald, R. F. Macdonald, J. A. F. McLean, Donald Matheson, E. E. P. Murray, and A. W. Souter (with second-class honours); A. S. Ashby, H. W. Balch, J. A. Barclay, E. B. Bright, W. M. Burgess, R. McN. Cadenhead, A. S. Cameron, Margaret D. Cameron, R. W. Catto, Margaret R. Clark, Enid M. M. Clow, Albert Coull, J. B. Cruickshank, D. J. Cusiter A. M. Davidson,

D. J. Dawson, L. H. Duthie, A. H. Emslie-Smith, J. K. Farquharson, Mary I. Forbes, F. W. Fyfe, E. N. Gauld, M. S. Glassman, Jamesina Gordon, R. M. Gordon, Denis Harkins, William Herbert, E. A. Horne, John Innes, Alexander Jamieson, Phyllis D. Leslie, C. M. Liddell, J. G. T. Lunn, R. J. L. MacBean, Robert McDonald, J. F. Mackay, J. A. McKenzie, Jessie M. McKenzie, Alan McKerlie, J. M. McKiddie, G. S. M. Mackintosh, J. M. Mair, Peter Matheson, Isabel M. Mathieson, G. N. Miller, S. J. H. Miller, Adam Milne, L. McD. E. Milne, Marian B. Milne, P. C. Mitchell, R. D. Monteith, J. J. T. Morrison, A. F. Murray, F. S. Rae, D. D. Reid, G. L. Ritchie, Margaret Robertson, John Ross, George Sangster, W. A. McD. Scott, William Selbie, Jean McK. Sheach, Elizabeth M. M. Simpson, John Slorach, William Smith, Florence Stephen, G. A. Stephen, I. C. Stephen, Henry Tatton, Hilda M. Teunon, Elsie J. Thomson, W. J. F. Treacher, G. B. Will, Isabella M. Will, S. C. Wright, and A. G. B. Young.

D.P.H.—W. J. Hogg.

University of Glasgow

Dr. Noah Morris has been appointed regius professor of materia medica in the University in succession to Prof. Ralph Stockman, who has resigned.

Dr. Morris, who is 43, was educated at Glasgow High School and Glasgow University, where he graduated B.Sc. with special distinction in 1913. Two years later he obtained the M.B. degree with commendation. He took his doctorates of medicine and science in 1921 and 1934 respectively. During the war he served in France and Italy as a captain in the Royal Army Medical Corps. He has held the appointments of Muirhead demonstrator and assistant to the regius professor of physiology in the University of Glasgow, and the chair of physiology at Anderson College. He holds his present post of lecturer in biochemistry in relation to diseases of infancy and childhood jointly under the university and the Royal Hospital for Sick Children, Glasgow, to which he is also biochemist. Dr. Morris has acted as examiner in physiology and biochemistry for the Scottish Conjoint Board and also for the fellowship of the Royal Faculty of Physicians and Surgeons of Glasgow. His published work includes papers on the metabolism of cœliac disease.

University of Dublin

At recent examinations in the School of Physic, Trinity College, the following candidates were successful :—

M.D.

A. J. O'Connor, J. B. Patrick, H. T. Ryan, and W. C. Sloan.

FINAL MEDICAL EXAMINATION FOR M.B., B.CH., AND B.A.O.

Therapeutics and Pathology.—M. O'C. Drury and F. L. Willington (first-class honours); Sylvia M. Hall, C. B. Robinson, M. E. Tapissier, Frank de Burgh Whyte, R. G. P. Heard, E. G. Hobart, R. S. W. Baker, Kathleen Dowling, and W. A. J. Pike (with second-class honours); W. B. Dennehy, E. G. Millar, C. J. Du Preez, Muriel Bannister, J. K. Craig, N. J. Hogan, J. C. G. Moore, A. C. Corbett, N. C. Brown, W. F. Carpenter, C. W. Bradfield, Matthew Daly, J. L. Handelman, J. C. de R. Sugars, Patricia D. Concannon, J. P. Gore-Grimes, D. A. Huggard, G. A. Anderson, Lucia M. E. FitzGerald, Edward Cullen, J. W. Boland, and C. H. Rutherford.

Medicine.—M. C. Brough, and Cecil Mushatt (with second-class honours); J. A. Strong, F. C. Heatley, Grace M. Wild, M. C. Wood, Charles Cunningham, J. N. G. Drury, J. E. Gillespie, J. C. Lambkin, J. G. Nixon, H. J. Walker, E. M'G. Cochrane, S. G. Heaton, H. F. T. MacFetridge, A. D. Parsons, Robert Pollock, G. N. MacFarlane, J. H. Mitchell, Jasmine Taylor, Patricia M. J. Conway, J. M'C. Caldwell, R. E. Taylor, J. B. Plews, Maureen N. S. Mason, E. G. Fox, Stella M. Coen, Frances M. C. Wolfe, C. M. Ludlow, and Jack Freedman.

Surgery.—Robert Pollock (with first-class honours); J. A. Strong, G. N. MacFarlane, H. M. Carson, H. J. Walker, J. E. Gillespie, and William Hayes (with second-class honours); H. F. T. MacFetridge, M. C. Wood, R. E. Taylor, R. W. Duncan, M. C. Brough, F. C. Heatley, H. F. Sloan, E. R. N. Cooke, Cecil Eppel, E. G. Fox, Charles Cunningham, J. C. Lambkin, C. J. S. Flood, J. H. Mitchell, Jasmine Taylor, G. K. Donald, W. J. G. Warwick, and A. D. Parsons.

Midwifery.—C. H. Blackham (with first-class honours); R. C. H. Cooke, William Jones, H. M'V. Buchanan, W. J. E. Pietersen, Maureen N. S. Mason, M. D. Thorp, J. M'C. Caldwell, and Frances M. C. Wolfe (with second-class honours); Thaddeus Fallon, J. E. Murphy, F. J. B. Convery, B. W. Hughes, Noël M'Sharry, J. F. Rishworth, L. A. S. Edmondson, Nathan Marks, M. D. M. Bergin, Bridget P. Mansfield, and J. T. Speidel.

DIPLOMA IN GYNÆCOLOGY AND OBSTETRICS

Ranajit Sinha, D. P. Harris, Kamala Narulker, Durga Wazalwar, and Elizabeth A. Akerele.

D.P.H.

Part I.—J. D. Murray.

Part II.—T. A. Austin, S. G. Rainsford, R. L. G. Proctor, H. W. Dalton, and Mary S. Miller.

D.P.M.

Part I.—D. T. Bardon.

The medical travelling prize and Bank's medal were awarded to Dr. G. J. Dixon and the De Renzy centenary prize to Dr. T. A. Austin.

St. Mary's Hospital

The annual dinner of past and present students of this hospital will be held on Saturday, Oct. 2nd, at 7.30 P.M., at Claridge's Hotel. Mr. V. Zachary Cope will be in the chair.

University of Cambridge

Gwynaeth Pretty Studentship.—Applications for this studentship should be made to Prof. H. R. Dean, department of pathology, before August 1st. It is of an annual value of £200 and is tenable for three years. The holder must undertake original research in the ætiology, pathology, and treatment of disease with particular but not exclusive reference to those diseases which cripple or disable in childhood or early life.

Nita King Scholarship.—The holder of this scholarship will be expected to devote himself to original research in the ætiology, pathology, and prevention of fevers. It is of an annual value of £60. Applications should be sent to Prof. Dean before August 1st.

Rheumatism Consultation Centres

During the joint congress of the International League against Rheumatism and the International Society of Medical Hydrology, to be held at Oxford next March, there will be an exhibition of projects (drawings, models, &c.) for consultation centres for rheumatic patients. Particulars may be had from the hon. secretary of the League, Dr. J. van Breemen, Keizersgracht 489, Amsterdam.

Industrial Welfare Society

A lecture course in industrial law has been arranged by this society and will be held at its headquarters, 14, Hobart-place, London, S.W.1, on Mondays at 6.30 P.M., beginning on Oct. 4th, for ten weeks. It will be conducted by Mr. H. Samuels, barrister-at-law. The syllabus includes lectures on industrial law, the law of master and servant, the Factory Acts, employers' liability and workmen's compensation, trade unions and association, national insurance, taxation, and rating law in relation to labour management, pensions funds and other forms of welfare, elements of company law and law relating to shops. It is suggested that the course should prove useful to industrial medical officers. Further information may be had from the secretary of the society.

Heatherwood Hospital, Ascot

In 1935 the London County Council decided to enlarge this hospital at an estimated cost of £72,000, providing an extra 100 beds for children with surgical tuberculosis. These children had formerly been sent to Princess Mary's Hospital for Children, Margate, which has now been converted into a much-needed seaside convalescent hospital for London women. It was felt desirable that children with surgical tuberculosis should be in a hospital nearer to London, and within easier reach of the Council's consultant and specialist organisation. Heatherwood Hospital, which has 55 acres of grounds partly wooded and partly laid out as gardens, was established in 1920 for children of ex-Service men suffering from surgical tuberculosis and orthopædic diseases, and was made over to the Council in 1929. It originally consisted of three single-storey ward blocks, one for children of both sexes up to the age of seven and one each for girls and boys over that age, with a light treatment block, workshops for the making of splints and surgical appliances, a hospital school, administrative buildings and staff quarters.

The new block which is now in occupation is a one-storey double-ward block for 100 patients planned for effective open-air treatment. The front of the block has glass shutters so arranged that the whole of the front can be opened to allow patients to have open-air treatment on days when the weather is uncertain. On brighter days it is possible for the beds to be wheeled on to a terrace. New dayrooms for use with the existing ward blocks, and covered ways to the hospital have been provided. A new wing has been added to the nurses' home to provide bedrooms for 55 nurses and maids and a sitting-room for the maids; each nurse will now have a bedroom for herself. A nurses' training centre and a self-contained flat for the matron have been included in the home. A portion of the isolation block has been set aside for sick nurses and the existing accommodation for them has been adapted as quarters for two assistant medical officers. The store-rooms, the boiler house, the laundry and kitchen, have been enlarged. The new buildings were designed by the architect to the council, Mr. E. P. Wheeler, F.R.I.B.A.

Scottish Board of Control

Dr. R. P. J. McBroom has been appointed a deputy commissioner of the General Board of Control for Scotland.

University College Hospital

Sir Herbert Samuelson, owing to ill health, has had to resign from the office of chairman and treasurer of this hospital, which he has held since 1927. Sir Courtauld Thomson has consented to act as chairman and treasurer until a successor is appointed.

Sanitary Inspectors' Association

The jubilee conference of this association will be held at Brighton from August 30th to Sept. 4th. Sir Leonard Hill, F.R.S., will give a presidential address and Major Stuart Blackmore will deliver a lecture on air-raid precautions and the public health services.

Course in Hospital Administration

A course of lectures and demonstrations on clinical practice and in hospital administration will be given at the Brook Hospital, Shooter's-hill, Woolwich, S.E., by Dr. J. V. Armstrong, on Mondays, Wednesdays, and Saturdays. The course will begin on Oct. 4th and further information may be had from the medical officer of health of the London County Council, Public Health Department (Special Hospitals), County Hall, S.E.1.

West London Medico-Chirurgical Society

The fifty-fifth annual dinner of this society was held at the Trocadero Restaurant on July 7th, with Mr. Neil Sinclair, the president, in the chair. The toast of The Society was proposed by Sir Gervais Rentoul, K.C., who said he thought it strange that a lawyer and resident magistrate having a criminal jurisdiction covering West London should be the guest of such a respectable society. He drew a distinction between the exponents of medicine and of the law: the doctor was praised and the lawyer was reviled in public, while in private it was the reverse. Like John Buchan's character, "When anyone puts the fear of death into ye, ye aye speak well o' him." In his work he had often had cause to be grateful for the help of the medical profession in general and of the members of the society in particular. In its half-century of life the society had done a great deal to encourage and stimulate scientific work, as well as to promote good fellowship, and it had served the public weal with great devotion. Mr. Sinclair, responding, said that the past year had been a successful one. The most interesting event had been the society's move into new quarters at the West London Post-graduate College, after having been buffeted about from place to place for many years. He expressed the society's gratitude to Colonel W. G. Johns, chairman of the West London Hospital. Keetly, the founder of the society, had had great difficulty in persuading the board of the hospital to form the society, but they met with very different treatment nowadays. Keetly was a very remarkable man, a surgeon far ahead of his times, and a first-class artist. His drawings had been presented to the society and they proposed forming a Keetly collection. Mr. V. B. Green-Armytage, proposing The Guests and Kindred Societies, quoted Dr. Johnson's remark to Reynolds: "A man, Sir, should keep his friendship in constant repair." It was Sir Gervais's profession that continually made mincemeat of the medical witness, but the surgeon and the barrister had two characteristics in common—great obstinacy and a greater optimism. The doctor had in addition four others: he need never practise what he preached, he was free to break the sixth commandment, he could bury his mistakes, and he alone was beloved. With the toast he coupled the names of the knight commander of the barbiturates, Sir William Willcox, and of the chevalier of the endocrine orchestra, Sir Walter Langdon-Brown. After dinner the society entertained members and guests in what the president called its "coronation bust." As an alternative to a trip up the river, a dance had been chosen, and with this the company gaily extended the occasion into the small hours.

Société Belge de Gastro-entérologie

A meeting of this society was held in Brussels on June 27th to discuss the medical and surgical treatment of gastric and duodenal ulcer. The speakers included visitors from France, Germany, Holland, and Switzerland, with Sir Arthur Hurst as one of the representatives of Great Britain.

The Tuberculosis Situation

On July 7th Sir Kingsley Wood, the Minister of Health, opened extensions to the Essex County Council's sanatorium at Black Notley. He said that tuberculosis was still responsible for more deaths annually than any of the principal diseases except cancer, and it produced its effects when the persons attacked should be enjoying a maximum amount of health and working capacity. The crude death-rate from tuberculosis in England and Wales had been reduced from 1468 per million in 1911 to 692 in 1936, and the number of deaths in the same period had been reduced from 53,000 to 28,000—the lowest figure yet recorded—though the population had in the meantime increased. But all this progress must not blind us to the menace of the disease. A first-class, well-managed sanatorium was not only a means of giving the best treatment possible but an invaluable engine of propaganda for the tuberculosis scheme in which it plays its part.

Venereal Diseases in Scandinavia

The Minister of Health, in accordance with an announcement recently made by him in the House of Commons, has arranged for two officers of his Department, Colonel L. W. Harrison and Mr. D. C. L. Ward, accompanied by Dr. Margaret Rorke, director of the venereal diseases department at the Royal Free Hospital, to pay a short visit to Sweden, Norway, Denmark, and Holland, for the purpose of studying the systems in operation in those countries for combating venereal diseases. The party left London on July 12th and will be joined later by Dr. T. Ferguson of the Scottish Department of Health.

Mental Hospital Association

The Lord Mayor of London opened the nineteenth annual meeting of the Mental Hospital Association at the Guildhall on Tuesday, when Mr. J. C. Grime presided. Sir Laurence Brock, chairman of the Board of Control, said that, while the general situation in mental hospitals was unaltered, overcrowding had increased. He referred to the steadiness of the recovery-rate during the last 30 years and suggested two reasons for this lack of success: there were not enough doctors in the service, and they had inadequate facilities for study and research. At present the prizes fell to the successful administrator; mental research should be made a career which was worth while.

British Empire Cancer Campaign

Lord Horder presided at the quarterly meeting of the grand council held last Monday at the new offices of the Campaign at 11, Grosvenor-crescent, London, S.W.1. On the recommendation of the scientific advisory committee the following grants were approved: £500 to Dr. P. M. F. Bishop, at Guy's Hospital, for one year of investigations on endocrine therapy in relation to cancer; £250 to Prof. G. I. Finch, at the Imperial College of Science and Technology, for an investigation, on behalf of the committee, into the nature and structure of carcinogenic compounds; and £160 to Dr. P. R. Peacock, at the Glasgow Royal Cancer Hospital, for the purchase of special apparatus. Dr. G. Cranston Fairchild was reappointed the William Morris research fellow in radiology at Mount Vernon Hospital for another year. A further grant was voted for 1937–38 for free educational lectures to the public in the counties of Bedfordshire, Berkshire, Buckinghamshire, Cambridgeshire, Essex, Hampshire, Hertfordshire, Huntingdonshire, Kent, Norfolk, Northamptonshire, Oxfordshire, Suffolk, Surrey, and Sussex. Although the scheme has only been in operation for a comparatively short time, 375 such lectures have already been given or arranged. Prof. J. McIntosh, director of the Bland-Sutton institute of pathology at the Middlesex Hospital, was elected one of its representatives on the grand council.

Valuation of the Approved Societies

The Fourth Valuation of the 7000 approved societies and branches which administer National Health Insurance shows total surpluses of £37,500,000, of which £30,000,000 was carried forward from the Third Valuation. In a report issued on Tuesday (Cmd. 5496: H.M. Stationery Office) the Government Actuary says that £20,000,000 has been certified as available for the provision of additional benefits for nearly 15,000,000 members of 6000 societies and branches in the next five years. It is estimated that this would suffice on the average to raise the normal cash benefits of these 15,000,000 members by about 20 per cent. and also to permit of about 4*s*. per member being paid annually for additional treatment benefits.

Oxygen for Commercial Aeroplanes

An announcement is made that the Air Ministry intends to demand that commercial aeroplanes which fly at heights of more than 15,000 feet shall carry oxygen. At the annual meeting of the American Medical Association last month Dr. A. L. Barach attributed recent accidents in the United States to oxygen-want in the pilots. He said that two hours' flying at 15,000 feet impaired reason, judgment control, and memory. (See THE LANCET, July 3rd, p. 36.)

Bristol Health Clinic

Sir Farquhar Buzzard on July 9th opened the new central health clinic at Bristol with which all district clinics will be linked. The building has cost nearly £50,000.

Travelling Fellowships in Tuberculosis

The Medical Research Council announce that they have awarded Dorothy Temple Cross research fellowships to the following candidates who intend to study problems of tuberculosis at centres abroad, during the academic year 1937–38 :—

Brian Connor Thompson, M.D. Camb., formerly assistant tuberculosis officer, Durham County Council (renewal of present fellowship for three months).

Ronald Herbert Robert Belsey, M.B. Lond., F.R.C.S. Eng., resident surgical officer, Hospital for Consumption and Diseases of the Chest, Brompton, London.

Brian Maurice Maxwell, M.D. Belf., senior assistant medical officer, Cheshire Joint Sanatorium, Market Drayton.

Oswald Sydney Tubbs, B.Chir. Camb., F.R.C.S. Eng., chief assistant to surgical unit, St. Bartholomew's Hospital, London.

Enid Mary Williams, M.D. Wales, assistant lecturer in tuberculosis, Welsh National School of Medicine, Cardiff.

Society for Relief of Widows and Orphans of Medical Men

At a quarterly court of directors held on July 7th, Mr. V. Warren Low, president, being in the chair, four new members were elected and the death of a member reported. A donation of £4 15*s*. was reported from the local medical and panel committee for the County of London. The sum of £2413 15*s*. was voted for the payment of the half-yearly grants to the widows and orphans in receipt of relief; there are at present 61 widows on the books. A committee was appointed to consider the best method of celebrating the 150th anniversary of the Society, which was founded on Oct. 29th, 1788. Membership of the Society is open to any registered medical man who at the time of his election is resident within a twenty-mile radius of Charing Cross. Full particulars from the secretary at 11, Chandos-street, London, W.1.

Scottish Medical Golfing Society

The society held their summer week-end meeting at Princes' Golf Club, Sandwich, on July 10th and 11th. The results of the competitions were as follows :—

Singles v. *Bogey*.—1st. Dr. Bruce Williamson (12): 3 down. 2nd. Sir Lancelot Barrington-Ward, Drs. Bertram Shires, Keith Forbes, Desmond Curran, and Walter Maclay tied: 4 down.

Four-ball v. *Bogey*.—1st. Drs. Bartleman and Curran: 5 up. 2nd. Drs. Maclay and Gordon, and Drs. Bruce Williamson and Keith Forbes: 3 up.

The Medal Round was won by Dr. Curran (17) 73 (7), with Dr. Donald Paterson second (18) 75, and Mr. Rupert Scott third (9) 76.

The Silver Haggis for the best eclectic score was won by Dr. W. A. Low, 86–18 = 68.

In addition to the above there were various hidden prizes.

Appointments

BANKS, A. L., M.D., M.R.C.P. Lond., D.P.H., has been appointed Medical Officer at the Ministry of Health.

COCKBURN, CHARLES, M.B. Aberd., D.O.M.S., Hon. Assistant Ophthalmic Surgeon to Aberdeen Royal Infirmary.

DAVIES, DORA, Melb., Resident Medical Officer at Luton Maternity Hospital.

FELDMAN, J. A., M.R.C.S. Eng., Assistant Medical Officer at Menston Mental Hospital, Yorks.

GILMORE, E. R., M.D. Manch., D.T.M., D.P.H., Medical Officer of Health and School Medical Officer for Leamington Spa.

MUTCH, J. R., M.D. Aberd., D.O.M.S., Hon. Assistant Ophthalmic Surgeon to Aberdeen Royal Infirmary.

PEARSON, N. F., M.R.C.S. Eng., D.P.H., Deputy Medical Officer of Health and Deputy School Medical Officer for Luton.

RAEBURN, H. A., M.D., M.R.C.P. Edin., D.P.H., Medical Officer at the Ministry of Health.

RANKINE, J. E., M.B. Glasg., D.P.H., Assistant Medical Officer and Assistant School Medical Officer for Blackpool.

TAGGART, H. J., M.B. Belf., F.R.C.S. Eng., D.O.M.S., Ophthalmic Surgeon to the Hospital of St. John and St. Elizabeth, London.

WARIN, J. F., M.D. Leeds, D.P.H., Assistant School Medical Officer and Assistant Medical Officer of Health for Blackburn.

WEIR, J. A., M.B. Glasg., Resident Surgical Officer at the Royal Infirmary, Sunderland.

WINNER, ALBERTINE L., M.D., M.R.C.P. Lond., Hon. Assistant Physician to the Elizabeth Garrett Anderson Hospital.

Radcliffe Infirmary, Oxford.—The following appointments are announced :—

ARMSTRONG, R. W., M.D. Belf., D.P.M., Honorary Physician to the Department of Nervous Disorders;

NAPIER, F. J., M.R.C.S. Eng., D.P.M., Honorary Assistant Physician to the Department of Nervous Disorders;

HANDFIELD-JONES, ELIZABETH M., M.R.C.S. Eng., D.A., Honorary Anæsthetist; and

ALSOP, A. F., B.Chir. Camb., Hon. Anæsthetist.

Royal Sussex County Hospital, Brighton.—The following appointments are announced :—

HINGSTON, C. L., M.R.C.S. Eng., D.P.M., Hon. Medical Officer to the Early Nervous Disorders Department;

WILLIAMSON, J. C. F. L., M.B. Camb., F.R.C.S. Eng., Hon. Surgical Registrar; and

FRASER, G. A., M.B. Edin., D.L.O., Hon. Surgical Registrar.

Certifying Surgeons under the Factory and Workshop Acts: Dr. F. W. CLARK (Inverleithen District, Peebles); Dr. C. SIMPSON (Hessle District, Yorkshire, East Riding); Dr. G. THOMPSON (South Cave District, Yorkshire, East Riding).

Vacancies

For further information refer to the advertisement columns

Aberdeen Royal Infirmary.—Gynæcological Registrar.

Ashton-under-Lyne District Infirmary.—H.S., at rate of £150.

Ayrshire Sanatorium, Glenafton, New Cumnock.—Med. Supt., £600.

Banbury, Oxon, Horton General Hosp.—Res. M.O., at rate of £150.

Bath, Royal United Hosp.—H.P., at rate of £250. Also two H.S.'s to Spec. Depts., each £150.

Bedford County Hosp.—H.S., at rate of £150.

Birmingham Children's Hosp.—Res. Surg. O., £175. Also H.P. and H.S., each at rate of £75.

Birmingham City.—Asst. M.O. for Maternity and Child Welfare, £500.

Birmingham, Dudley-road Hosp.—Asst. Pathologist, £650.

Birmingham, Little Bromwich Hosp. for Infectious Diseases.—Two Jun. Res. M.O.'s, each £300.

Blackburn Royal Infirmary.—H.S., £175.

Board of Education, Whitehall, S.W.—Dietitian or Nutritionist, £500.

Bolton Royal Infirmary.—Two H.S.'s, each at rate of £150.

Bolton, Townleys Hosp., Farnworth.—Asst. M.O., £250.

Bradford New Royal Infirmary.—Res. M.O. and Asst. Pathologist, £225.

Bradford Royal Eye and Ear Hosp.—Two H.S.'s, each £180.

Brighton, Royal Sussex County Hosp.—Cas. H.S., £120.

Bristol City and County.—Asst. M.O.H., £500.

Bristol, Southmead Municipal General Hosp.—Deputy Med. Supt., £500.

Cambridge, Addenbrooke's Hosp.—Res. Anæsthetist and Emergency Officer, at rate of £130.

Canterbury, Kent and Canterbury Hosp.—H.S., at rate of £125.

Carlisle City.—Asst. M.O. for Maternity and Child Welfare, £600.

Carlisle, Cumberland Infirmary.—H.S., £155.

Chesterfield and North Derbyshire Royal Hosp.—H.S., at rate of £150. Also Final Year Student.

Doncaster Royal Infirmary.—H.S., £175.

Derby, Derbyshire Royal Infirmary.—Cas. O. and Orthopædic H.S., £150.

Durham County and Sunderland Eye Infirmary.—H.S., £350.

Ealing, King Edward Memorial Hosp.—Cas. O. and Deputy Res. M.O., at rate of £225.

Eastbourne, Princess Alice Hosp.—Res. H.S., £150.

Eastbourne, St. Mary's Hosp.—Res. H.S., £150.

Essex County Council.—Jun. Asst. M.O. for Black Notley Sanatorium, £250.

Evelina Hosp. for Sick Children, Southwark, S.E.—H.S., at rate of £120.

Exeter, Princess Elizabeth Orthopædic Hosp.—Res. H.S., at rate of £150.

Glasgow University.—Lectureship in Human Embryology and Histology in Dept. of Anatomy, £500–£600.
Grimsby and District Hosp.—Sen. H.S. and H.P., at rate of £200 and £150 respectively.
Hampstead General and N.W. London Hosp., Haverstock-hill, N.W.—H.P. Also Cas. O. to Out-patient Dept., each at rate of £100.
Harrogate and District General Hosp.—Cas. O. and H.S. to Ear, Nose, and Throat and Maternity Depts., at rate of £150.
Hertford County Hosp.—H.P., at rate of £150.
His Majesty's Colonial Medical Service.—Vacancies for M.O.'s, £600–£700.
Hosp. for Epilepsy and Paralysis, Maida Vale, W.—H.P., at rate of £100.
Hull, Beverley-road Institution.—Asst. M.O.'s, each £350.
Hull Royal Infirmary.—H.S. to Ophth. and Ear, Nose, and Throat Dept., at rate of £150.
Ilford, King George Hosp.—H.S., at rate of £100.
Ipswich, East Suffolk and Ipswich Hosp.—Cas. O., at rate of £144.
Ipswich Mental Hosp.—Jun. Asst. M.O., £350.
Kidderminster and District General Hosp.—Jun. H.S., £100.
Kincardine County.—Deputy M.O.H., £600.
Kingston-upon-Thames Royal Borough.—M.O.H. and School M.O., £950.
Lancashire, Biddulph Grange Orthopædic Hosp.—Sen. H.S., at rate of £250.
Leicester City.—Asst. M.O.H.'s, each £500.
Leigh Infirmary, Lancashire.—Jun. H.S., at rate of £150.
Lincolnshire (Kesteven) County Council.—Asst. County M.O.H., £500.
Liverpool, Alder Hey Hosp. for Children.—Two Res. Asst. M.O.'s, each £200.
Liverpool, Port Sanitary and Hospitals Committee.—Res. Asst. M.O.'s, each £200.
Liverpool Royal Babies' Hosp., Woolton.—Res. M.O., at rate of £125.
Liverpool Sanatorium, Delamere Forest, Frodsham.—Jun. Asst. to Med. Supt., £225.
London Chest Hosp., Victoria Park, E.—H.P., at rate of £100.
London County Council.—Coroner for the County of London, £1700. M.O., £99. Also Dental Anæsthetist, £56 5s.
London University.—University Readership in Bacteriology at British Postgraduate Medical School, £800.
Manchester, Ancoats Hosp.—Cas. O., £250. H.S. to Ear, Nose, and Throat Dept. and H.P. to Hon. Phys., at rate of £100. Also Asst. Surg. Officer to Orthopædic Dept., 10s. 6d. per attendance.
Manchester Ear Hosp., Grosvenor-square, All Saints.—Res. H.S., £120.
Manchester, Prestwich Mental Hosp.—Locum Tenent M.O., 7 guineas per week.
Manchester Royal Infirmary.—Res. Surg. O., £200.
Market Drayton, Cheshire Joint Sanatorium.—Res. H.P., £250.
Metropolitan Hosp., Kingsland-road, E.—Cas. O. and Res. Anæsthetist, £100.
National Hosp. for Diseases of the Nervous System, Queen-square, W.C.—Asst. Physician. Also H.P., at rate of £100.
National Temperance Hosp., Hampstead-road, N.W.—Cas. O., at rate of £120.
Newcastle-upon-Tyne, Royal Victoria Infirmary.—Sen. Accident Room H.S., £150.
Northampton County Borough Education Committee.—Asst. School Dentist, £450.
Nottingham City Isolation Hosp.—Temp. Res. M.O., at rate of £350.
Nottingham General Hosp.—H.S., at rate of £150.
Oldham Municipal Hosp.—Res. Surg. Officer, £500.
Oswestry, Robert Jones and Agnes Hunt Orthopædic Hosp.—H.S., at rate of £200.
Plymouth, City General Hosp.—Deputy Med. Supt., £450.
Plymouth, Prince of Wales's Hosp., Devonport.—Jun. H.S., at rate of £120.
Plymouth, Prince of Wales's Hosp., Greenbank-road.—H.P. and H.S., each at rate of £120.
Port of Spain City Council.—M.O.H., £800.
Portsmouth City.—Asst. M.O.H. and second Res. Med. Asst., £500.
Portsmouth Royal Hosp.—H.P., at rate of £130.
Portsmouth, Saint Mary's Hosp.—Sen. Res. M.O., £350.
Preston, Sharoe Green Hosp.—Jun. Asst. Res. M.O., at rate of £100.
Reading, Royal Berkshire Hosp.—Res. Anæsthetist. Also Res. Cas. O., at rate of £250 and £150 respectively.
Rochdale Infirmary and Dispensary.—Sen. H.S., £250.
Rotherham Hosp.—H.S. for Ophth. and Ear, Nose, and Throat Depts., £150.
Royal Naval Dental Service.—Eight Dental Officers.
Royal Northern Hosp., Holloway, N.—Clin. Asst. in Radio-Therapeutic Dept.
St. Alban's and Mid Herts Hosp.—Secretary, £200.
St. Albans, Hill End Hosp. for Mental and Nervous Disorders.—Fourth Asst. M.O., £350.
St. John's Hosp., Lewisham, S.E.—Res. Cas. O., at rate of £100.
St. Leonards-on-Sea Buchanan Hosp.—Jun. H.S., £125.
St. Mark's Hosp. for Cancer, &c., City-road, E.C.—Clin. Asst. for Out-patients' Dept.
Salford, Hope Hosp.—Asst. Res. M.O., at rate of £200.
Salisbury, General Infirmary.—Res. M.O., £250.
Sheffield Children's Hosp.—H.S., £100.
Sheffield, Jessop Hosp. for Women.—Res. M.O., at rate of £150.
Sheffield Royal Infirmary.—H.S., Aural H.S., and H.S. to Orthopædic, &c., Service, each at rate of £80. Ophth. H.S., at rate of £120, Cas. O., at rate of £150.
Shrewsbury, Royal Salop Infirmary.—Res. H.P., at rate of £160.
South Africa, Victoria Hosp., Lovedale.—Med. Supt. and Chief M.O. Also two Asst. M.O.'s, each £350 for men, each £325 for women.
South Shields General Hosp.—H.S., at rate of £150.
Stoke-on-Trent Longton Hosp.—H.S., £160.
Surrey County Council.—Jun. Asst. M.O. for County Sanatorium, Milford, at rate of £350.
Swansea General and Eye Hosp.—H.S., at rate of £150. Also Locum H.S. to E.N.T. and Ophth. Depts., at rate of £200.
Taunton and Somerset Hosp.—Sen. R.M.O., at rate of £200.
Wakefield, Clayton Hosp.—Two H.S.'s, each £200.
Weir Hosp., Grove-road, Balham, S.W.—Jun. Res. M.O., £150.
Weston-super-Mare General Hosp.—Res. H.P., £150.
Woking and District Victoria Hosp.—Res. M.O., at rate of £120.
Wrexham and East Denbighshire War Memorial Hosp.—Res. H.S., at rate of £150.

The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Newcastle Emlyn (Carmarthen).

Births, Marriages, and Deaths

BIRTHS

COOK.—On July 10th, at Bexley Hospital, Kent, the wife of Dr. Leslie C. Cook, of a son.
FORRESTER.—On July 5th, at Llanelly, the wife of Dr. G. Stuart Forrester, of a daughter.
HOGG.—On July 9th, at Devonshire-place, London, the wife of Mr. James C. Hogg, F.R.C.S., of a son.
LEWIS.—On July 7th, at Cambridge, the wife of Dr. Windsor Lewis, of a daughter.
LOVE.—On July 6th, at Highgate, the wife of Mr. R. J. McNeill Love, F.R.C.S., of a daughter.
MACLAY.—On July 11th, at Kensington-square, London, the wife of Dr. the Hon. Walter Maclay, of a son.

MARRIAGES

PROCTOR—HOCKEN.—On July 6th, at St. Andrew's Church, Plymouth, Surgeon-Commander R. L. G. Proctor, M.B., F.R.C.P.I., R.N., elder son of Mrs. Proctor and the late Rev. R. G. Proctor, B.D., of Dublin, to Dorothy Joan, elder daughter of Engineer Rear-Admiral and Mrs. J. H. Hocken, of Elburton, Devon.
RENWICK—MCISAAC.—On July 6th, at St. Columba's Church, Glasgow, John Renwick, M.B., Keighley, Yorks, to Mary McIsaac, of the Isle of Jura, Argyle.
SMYTH—FAIRCHILD.—On July 6th, in New York City, Arthur J. Smyth, M.B., of Cambridge, to Priscilla S. Fairchild, of Noroton, Connecticut, U.S.A.

DEATHS

UPTON.—On July 10th, at 28, Medina Villas, Hove, Sussex, Herbert Chrippes Upton, M.R.C.S. Eng., in his 93rd year.
WOODS.—On Tuesday, July 6th, at Barton-on-Sea, Hants, Herbert Hunter Woods, M.R.C.S. Eng., D.P.H., aged 67.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

BRITISH MEDICAL ASSOCIATION.
WEDNESDAY, July 21st, THURSDAY and FRIDAY.—Annual meeting in Belfast.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane-road, W.
WEDNESDAY, July 21st.—3 P.M., clinical and pathological conference (surgical).
THURSDAY.—3 P.M., gynæcological endocrinology.
FRIDAY.—3 P.M., clinical and pathological conference (obstetrics and gynæcology).
Daily, 10 A.M. to 4 P.M., medical clinics, surgical clinics and operations, obstetrical and gynæcological clinics and operations.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, July 19th, to SATURDAY, July 24th.—ALL SAINTS' HOSPITAL, Austral-street, West-square, S.E., afternoon and evening course in urology.—HOSPITAL FOR DISEASES OF THE SKIN, Blackfriars-road, S.E., afternoon course in dermatology.—Open only to members of the fellowship.

HOSPITAL FOR EPILEPSY AND PARALYSIS, Maida Vale, W.
THURSDAY, July 22nd.—3 P.M., Dr. Wilfred Harris: Clinical Demonstration.

GIFTS TO HOSPITALS.—At the annual meeting of the Princess Margaret Rose Hospital at Edinburgh on July 9th it was announced that a donation of £8000 has been made by Lord Nuffield.—The Sevenoaks and Holmesdale Hospital has been cleared of debt by a gift of £4000 from Mr. E. W. Meyerstein.

NOTES, COMMENTS, AND ABSTRACTS

PSYCHOLOGY OF INTERNATIONAL RELATIONS

IN an address at Friends House, London, on July 6th, Prof. Ernest M. Ligon of Schenectady, U.S.A., said it was not always true that if nations knew all about one another they would like one another. Hence the aim of those who worked for peace should be less "understanding" than "cordial relations."

The basic concept in social psychology was the "attitude": the meaning which a person attached to a situation. The emotional element was more important than the intellectual, and much of the error in international thinking was due to its neglect. An attitude might be specific (e.g., a dislike of people with red hair) or general (e.g., patriotism). Often the two conflicted; thus a man might have a strong sentiment against race prejudice yet find it distasteful to make intimate contacts with members of another race. Some general attitudes were so closely related to human nature as to be almost universal—e.g., sympathy. In international relations the universal attitudes could best be counted upon, and in these knowledge ("understanding") was more likely to lead to mutual attraction than in the other two groups. On these attitudes depended men's ability to live together in harmony. The relatively universal attitudes were nearly all favourable; in the others success or failure depended on education in the widest sense.

In the relationship between any two nations three other and distinct groups of attitudes were involved. First came the attitudes which individuals of one nation held towards individuals of another. The second group included those attitudes which the people of one nation held towards, not the people of another nation, but the other nation itself. These were usually part of their patriotism and included their attitude towards their own nation. The third group included the attitudes which governments held towards each other; these were often entirely separate from the attitudes held by the common people towards other nations. More ruthless, selfish, and irrational attitudes had probably been held by governments than ever by peoples. When all these attitudes were favourable between two nations, war was highly improbable. When one of the groups was unfavourable, it was possible. Between two nations of different race, religion, and social customs the attitudes of the two peoples toward one another were very important; between nations of the same race and religion the other two groups of attitudes counted more. Governments usually tried to build such attitudes of patriotism that in time of conflict they would not have their people against them. Governments would find it difficult to make war if the other two groups of attitudes were strongly favourable.

Turning to his particular subject—namely, Anglo-American understanding—Prof. Ligon said that both Great Britain and the United States had much national conceit and each thought of the other as second best. It might not be such a long step for each to put the other on a par and have an Anglo-American understanding which would constitute the most colossal example of self-righteousness and bigotry in history! The central principle of bringing about better understanding was obviously to change undesirable attitudes for better ones. Some unfavourable attitudes were purely the result of ignorance, and many potentially favourable ones were neglected. This fault could be corrected through education. An attitude of some humility would be found if in every country it were considered important for every man who wished to be thoroughly educated to spend at least one year in another country—or at least to realise that no nation had everything of value within its own borders. Better still would be a method of superseding faulty attitudes by good ones. At present the principle that a country should seek its own interests was so completely accepted as right that a statesman who placed universal right above national right would probably not be elected to office. So long as this attitude was basic in governments, international strife would not end. Logic-tight compartments in the mind should be broken down and the same ethics should be applied to political as to personal contacts. If the British were as completely unselfish towards other nations as they were towards foreign visitors, they would be the greatest exponents of international peace.

Prof. Ligon defined the basic Christian attitudes as sensitivity to the needs of others, and determination to give every man his chance of happiness and success, to resolve the conflicts within and between men, and to serve men whether they wanted to be served or not. To apply these principles to international relations was no simple matter, and he wished that a Christian court of international justice could be set up to report on current problems from a Christian point of view. By such methods genuine international attitudes might be created and bring about genuine international understanding.

THE PIONEER HEALTH CENTRE

THE enthusiasm that characterises all the gatherings at the Pioneer Health Centre in Peckham prevailed at the annual meeting on July 12th. In introducing the speakers, Lady Maureen Stanley welcomed the centre as the beginning of a new movement, which, it is hoped, may spread throughout England and possibly the Empire, in teaching the family how to be healthy. Lord Nuffield, the president and a generous benefactor, expressed the hope that the Government would establish similar centres in every big town throughout the country. "England is prosperous to-day," he said, "but give a man a job and a health centre of this nature and England will be greater than ever before."

The value of the centre for experimental research was described by Dr. Scott Williamson, its founder with Dr. Innes Pearse. He spoke of it as a field for scientific inquiry. The first object has been to make a survey, which has already revealed what he described as a "truly alarming state of affairs." In only 8 per cent. of the 1666 examined could be found "no diagnosable disease." Through the cordial coöperation of the members in carrying out the advice given to them the improvement in the condition of a large proportion had been "staggering." After the survey the Centre became a great laboratory of experimental research. Its value as a place for research in applied social services was emphasised by Prof. Julian Huxley, who said that it was providing new ideas about the real nature of health by substituting for a positive a negative conception. In particular he drew attention to the distinction that is being drawn between disease and disorders as will appear from the scientific report now in preparation. Prof. Huxley found an analogy between health and economics in that both are concerned with a problem of distribution. Knowledge is now being lavishly bestowed upon people who are ill, but the Centre marks an advance in preventive medicine towards the study of health, with the family as the social unit. He claimed, accordingly, that the Centre deserves a share of the financial support given in other and less profitable directions. It was hoped that the Centre would become self-supporting in three years, but care in maintaining the scientific aim, which has made necessary 10,000 appointments in little more than eighteen months, has retarded the enrolment of

additional families necessary to complete the complement to secure financial stability, for there can never be less than 9 examinations involved in the overhaul of a family of 4 persons.

Not the least remarkable feature of the work of the Centre is the way in which it brings together many sections of the community and does so by such original means as the selection of 10 P.M. for the hour of meeting.

A NEW IRISH JOURNAL

WE have received the first number, dated July, 1937, of the *Journal* of the Irish Free State Medical Union. An editorial introduction recalls the chief object of the Union (I.M.A. and B.M.A.) which is to promote the medical and allied services, and to maintain the honour and interests of the medical profession. The journal is to be a medium for free expression of opinions by members of the Union and in the main a medico-political publication. The editor is Dr. R. J. Rowlette, who is assisted by Dr. J. C. Flood.

NEW PREPARATIONS

P.A.B.S. is the name given by Messrs. C. J. Hewlett and Son, Ltd., to their preparation of *p*-aminobenzenesulphonamide, now generally known as sulphanilamide. As conditions that may suitably be treated with this drug they mention puerperal sepsis, erysipelas, scarlet fever, streptococcal inflammation of the throat and tonsils, meningitis, and streptococcal arthritis, and its use as a prophylactic against hæmolytic streptococcal infections is suggested. P.A.B.S. is supplied in tablets of 7½ grains (0·5 gramme) each, and may be had from the manufacturers at 35, Charlotte-street, London, E.C.2.

PERCALCIN.—Made at Evans' Biological Institute by Evans Sons Lescher and Webb, Ltd. (Liverpool and London), Percalcin is described as a highly concentrated solution of calcium in organic combination for intravenous or intramuscular injection. The manufacturers state that each 5 c.cm. of Percalcin solution contains the equivalent of 0·2 gramme of calcium hydroxide; from which they conclude that the preparation contains 2½ times as much calcium as a 10 per cent. solution of calcium gluconate. They also claim that it is more stable than the gluconate, and that it causes no pain or irritation on injection.

ANTOSTAB is prepared from the serum of pregnant mares, and is put forward as a means of stimulating the gonads, male or female. It is regarded as an anterior pituitary hormone—to be distinguished from "anterior-pituitary-like" substances obtained from pregnancy urine—and its effect on the ovary is to stimulate ovulation and the secretion of œstrin. Its follicle-maturing activity, in all the species of animals examined, is said to have been greater than that of any other known hormone. One mouse-unit of Antostab is defined as the amount that will double the weight of the ovary of a 3–4 weeks' old infantile female mouse in 3–4 days. The preparation is sold in ampoules as a sterile dry powder, with ampoules containing a suitable solvent, and courses of six intramuscular injections of 100 m.u. are reported to have given good results in severe cases of menstrual disorder associated with ovarian or anterior pituitary disorder. Particulars may be had from Boots Pure Drug Co., Ltd. (Wholesale and Export Dept.), Station-street, Nottingham.

A FILM ABOUT ELASTOPLAST.—The value of the occlusive dressing is now well established, and elastic plaster is convenient for this as for other purposes. To illustrate the various uses of their Elastoplast Messrs. T. J. Smith and Nephew (Neptune-street, Hull) have prepared a film which they offer for exhibition to medical audiences. It deals with varicose affections, minor and major injuries, post-operative dressings, skin diseases, sprains and joint injuries, and foot deformities.

NAPOLEON AGAIN

SOME might think it rash to add to the already vast bibliography of Napoleon, but General Brice,[1] being both doctor and soldier, is doubly qualified for the task. Napoleon is supposed to have believed that his destiny was guided by a star and in the first part of the book his career is surveyed as though it were the course of a star from its dawn, through ascent, zenith, and decline, to its final extinction. Part II deals with the personality and mortal body and Part III with the external influences which helped to mould Napoleon; this will be, perhaps, more interesting to the medical reader. The author, rejecting the traditional diagnosis of carcinoma of stomach as the cause of death of his hero, adduces alternative, if not altogether convincing, evidence of amœbic abscess of the liver following dysentery contracted at St. Helena. Doctors will not be surprised to learn that the desire to dominate, which was the constant spur to Napoleon's ambition, is attributed to a sense of inferiority from childhood; in this at least Napoleon was no more and no less a riddle than any other member of the human race. Although his origin was partly Italian, it was the Corsican strain which prevailed and largely accounted for his mysticism and half-belief in superstition. General Brice, who writes with sympathy for and admiration of his subject, is no blind hero-worshipper. In his anxiety to substantiate his statements he quotes rather too freely from authorities, but this is a fault on the right side. Even those who prefer to think of the great servants of France in terms rather of Louis Pasteur than of Napoleon Buonaparte should not neglect this book, for though the dictator mind may be unpopular in this country, men of this type are always interesting. Mr. Basil Crighton is to be congratulated on an admirable translation.

PHYSICAL EDUCATION FOR BOYS

A DESCRIPTION of the aims and difficulties of schoolmasters who are actively assisting physical education is of particular interest to doctors as parents, school doctors, or just professionals in health matters. In a series of essays[2] ten men of widely different teaching experience give their views on this prickly subject. Some of the authors have carried out what they advocate, some have had little opportunity to do so, and still others, being headmasters, have been in a position to create such opportunity in their schools. The book is concerned, however, less with existing conditions than with possibilities. The authors would like to see in every school departments of physical education with control over all physical activities, with a director on a par with the rest of the staff and available for discussion of difficulties. The needs of all the children should be catered for, they say, and not just the teams; the director through his daily contact with the children should act as an auxiliary medical eye keeping watch for minor physical defects and nervous disturbances. The belief that the subject is about to come into its own is shown by four references to Cinderella, whose name is as overworked as was the family drudge who has become the classical symbol for neglect.

THE MEDICAL DIRECTORY

Messrs. J. and A. CHURCHILL LTD. write: "To maintain the accuracy of our annual volume we rely upon the return of our schedule, which has been posted to each member of the medical profession. Should the schedule have been lost or mislaid we will gladly forward a duplicate upon request. The full names of the doctor should be sent for identification." Messrs. Churchill's address is 104, Gloucester-place, London, W.1.

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[1] The Riddle of Napoleon. By Raoul Brice, Surgeon Lieutenant-General, French Army. London: G. P. Putnam Sons. 1937. Pp. 345. 15*s*.

[2] Physical Education for Boys. Edited by G. W. Hedley and G. W. Murray. London: Methuen and Co. Pp. 119. 3*s*. 6*d*.